

Pauropoda (Myriapoda) from New Caledonia

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ABSTRACT

A collection of 127 specimens of Pauropoda is described and localities and habitat records are given. 22 species representing 5 genera and 2 families (Pauropodidae and Eurypauropodidae), all but one new to New Caledonia, are represented. 17 species are described as new to science : *Allopauropus novicaledonicus*, *A. minusculus*, *A. tillierae*, *A. ovatus*, *A. macropygus*, *A. radiosus*, *A. sessilis*, *A. silvaticus*, *A.*

unioensis; *Pauropus montanus*, *P. aculeatus*, *P. seorsum*; *Stylopauropoides bilobatus*; *Hemipauropus melanesicus*; *Samarangopus umbraculus*, *S. spathaceus*, *S. plearum*. Eighteen out of 22 species are endemic to New Caledonia. In general the New Caledonian Pauropoda seem to have closer affinities with the Ethiopian than with the Oriental taxa, and affinities closer with the latter than with the Notogean fauna.

RÉSUMÉ

Une collection de 127 spécimens de Pauropodes de Nouvelle-Calédonie contient 22 espèces, dont 21 sont identifiées et pour lesquelles localités et habitats sont donnés. Toutes les espèces sauf une sont nouvelles pour la Nouvelle-Calédonie. Cinq genres sont représentés et appartiennent à deux familles, Pauropodidae and Eurypauropodidae. Dix-sept espèces nouvelles pour la science sont décrites et leur statut systématique est discuté : *Allopauropus novicaledonicus*, *A. minusculus*, *A. tillierae*, *A. ovatus*, *A. macropygus*, *A. radiosus*,

A. sessilis, *A. silvaticus*, *A. unioensis*; *Pauropus montanus*, *P. aculeatus*, *P. seorsum*; *Stylopauropoides bilobatus*; *Hemipauropus melanesicus*; *Samarangopus umbraculus*, *S. spathaceus*, *S. plearum*. Dix-huit espèces sur 22 sont endémiques à la Nouvelle-Calédonie. En général, les Pauropodes néocalédoniens semblent plus proches des taxons éthiopiens que des taxons orientaux, et plus proches de ces derniers que des taxons notogéens.

INTRODUCTION

Only one pauropod has previously been reported from New Caledonia : in 1954 a single specimen was collected from Yahoué, Chapeau de Gendarme, in the Northeastern part of Nouméa and the species, *Samarangopus browni*, was described by REMY two years later (1956f : 519-523). Thanks to Pr. S. TILLIER, a collection from Berlese funnel extractions accumulated during later years in the course of the research programs of the Muséum national d'Histoire naturelle, Paris, has been put at my disposal. It contains 125 specimens, of which 120 have been

assigned to species. Altogether 21 species are identified, all being new to the island ; 17 of them are new to science and are described below. Collecting stations are represented on fig. 1.

In all lists of material, MNHN stands for Muséum national d'Histoire naturelle, Paris. Abbreviations : ad., subad. and juv. refer to adult, subadult or juvenile specimens with the number of pairs of legs indicated. In measurements, the range of variation observed in paratypes is indicated in brackets.



FIG. 1. — Location of the collecting stations, numbered from North to South. 1 : Mt. Panié ; 2 : Ouayaguette ; 3 : Mt. Oua Tilou ; 4 : Bobeitio ; 5 : Mt. Aoupinié ; 6 : Mt. Néponkouï ; 7 : Mt. Djiaouma ; 8 : Mt. Mè Ori ; 9 : Mt. Table Unio ; 10 : Col d'Amieu ; 11 : Plateau de Dogny ; 12 : Vallée de la To Ndeu ; 13 : Mt. Ningua ; 14 : Mt. Do ; 15 : Dent de Saint-Vincent ; 16 : Presqu'île Montagnès ; 17 : Rivière Bleue ; 18 : Rivière Blanche ; 19 : Chutes de la Madeleine ; 20 : Nouméa ; 21 : Goro ; 22 : Mt. Oungoné.

SYSTEMATICS

Family PAUROPODIDAE

Genus *ALLOPAUROPUS* SilvestriSubgenus *ALLOPAUROPUS* s. str.*Allopauropus (A.) novicaledonicus* n. sp.

(figs 2-12)

Description : length 1.73 mm. Head. Tergal setae of medium length, slightly clavate, annulate, blunt; lateral ones cylindrical blunt. Relative lengths of setae, 1st row : $a_1 = a_2 = 10$; 2nd row : $a_1 = 11$, $a_2 = 22$, $a_3 = 17$; 3rd row : $a_1 = a_2 = 9$; 4th row : $a_1 = 13$, $a_2 = ?$, $a_3 = 24$. The ratio a_1/a_2 is : 1st row 1.3, 2nd row 0.5, 3rd row 0.8, 4th row 0.9. Length of temporal organs 0.8 of their shortest distance apart; no pistil. Anterior of temporal organ on the lower side of head a small fungiform organ which is a little longer than wide. Head cuticle almost glabrous.

Antennae partly broken. Segment 4 with 6 setae; p and p' lacking, p'' and p''' annulate, r pubescent; p'' tapering, p''' , r and u cylindrical; relative lengths : $p'' = 100$, $p''' = u = 9$, $r = 53$. Tergal branch t lacking, sternal branch s 2.6 times longer than wide with its anterodistal corner very truncate. Seta q and flagella lacking. Globulus g 1.4 times as long as wide with a rather thick stalk; capsule subspherical, very little flattened; 5 bracts. Antenna glabrous.

Trunk. Setae of collum segment simple, cylindrical, annulate, blunt; lateral ones twice longer than submedian ones; sternite process triangular; process and basal parts of appendages with minute pubescence. Setae on tergites as on head. Tergite VI with 4 + 2 setae; distance between posterior submedian setae 0.8 of their length; these setae a little shorter than pygidial a_1 . Cuticle of tergites almost glabrous. Relative lengths of trichobothria : $T1 = 100$, $T2$ broken, $T3 \approx 100$, $T4 = 183$, $T5 = 137$. $T1$ with very thin axes; pubescence hairs short simple, oblique on proximal 2/3, erect distally; $T4$ and $T5$ with thin axes too, pubescence as on $T1$; axes of $T3$ thicker.

Legs slender and medium sized. Setae of coxa and trochanter of leg 9 subequal, furcate, cylindrical, annulate, blunt. More anteriorly these setae have glabrous rudimentary secondary branches; seta on coxa thicker than the one on trochanter. Tarsus of leg 9 slender, 4.2 times longer than its largest width. Proximal seta tapering, pointed, with depressed pubescence; length 0.4 of the length of tarsus and 3.3 times as long as distal seta; the latter subcylindrical, tapering, blunt, with oblique pubescence. Cuticle of tarsus with short dense pubescence.

Pygidium. Tergum. Posterior margin evenly rounded with a median bulge having a shallow median incision. Relative lengths of setae $a_1 = 100$, $a_2 = 107$ and 125 , $a_3 = ?$ (in juvenile paratype = 192), $st = 11$. The a_1 and a_2 proportionally long tapering, each seta with a few pubescence hairs only, all short oblique; st spatulate, very shortly pubescent; a_1 straight, a_2 somewhat curved inwards, st slightly converging. Cuticle glabrous.

Sternum. Posterior margin with a distinct indentation and a median broadly triangular lobe covering the base of anal plate. Relative lengths of setae ($a_1 = 100$) : $b_1 =$ at least 57-64, $b_2 = 44-50$, $b_3 = 20-22$. These setae with short oblique

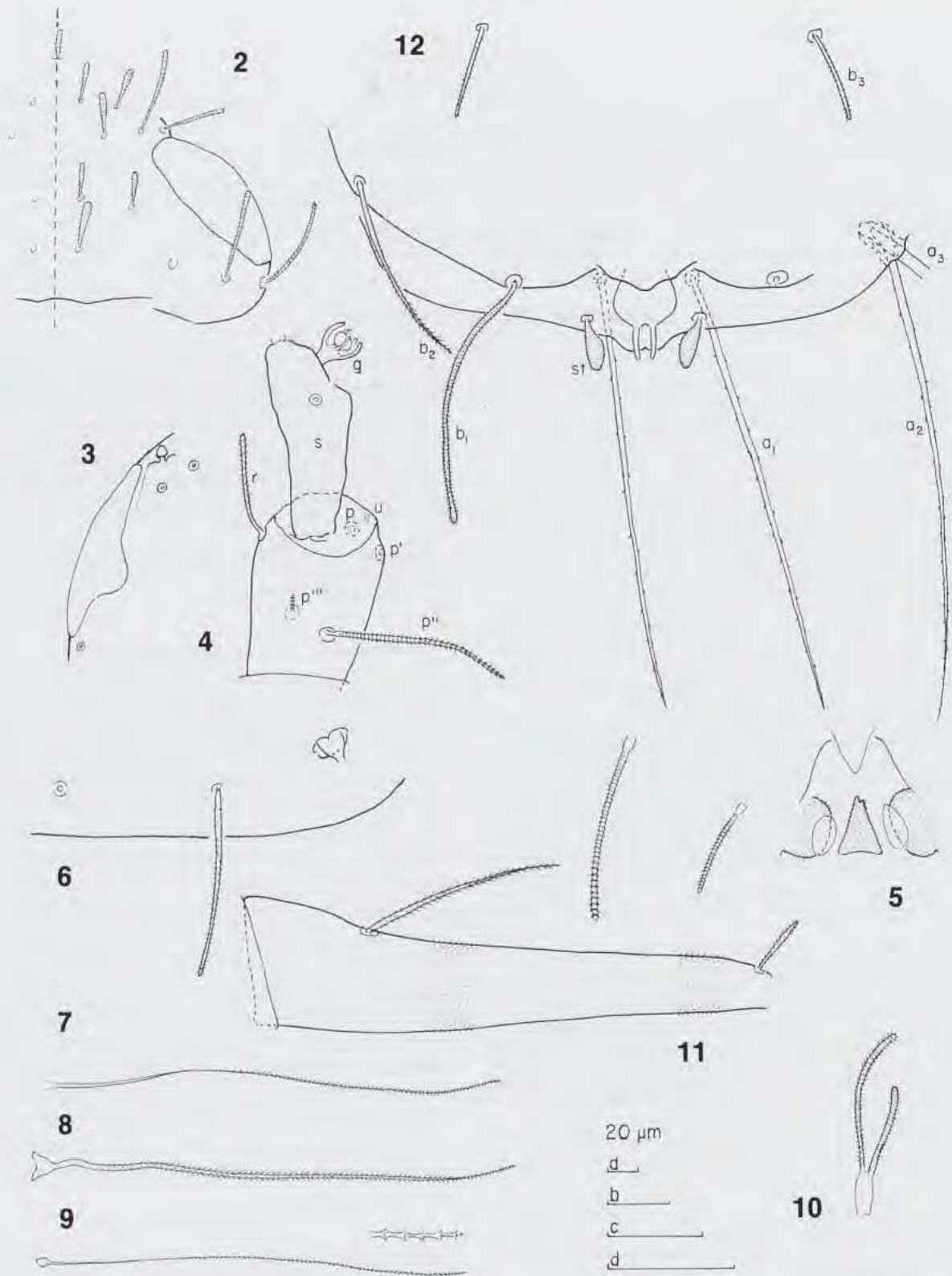
pubescence; b_1 cylindrical, distally somewhat widened; b_2 tapering, pointed, curved inwards, converging; b_3 cylindrical, blunt, diverging, b_1 about as long as their distance apart; b_2 1.1 times longer than distance b_1-b_2 ; b_3 0.3 of distance b_2-b_3 . Anal plate a little broader than long, narrowest anteriorly with broadly rounded lateral margins; hind margin with two submedian appendages which are cylindrical, blunt, a little curved inwards; they are distinctly shorter than the length of plate.

Stage juv. 5. In general very good resemblance to adult stage. Relative length of setae $d_3 = 60$ (pygidial $a_1 = 100$); they reach 0.3 of distance d_3-d_2 .

Discussion : *A. novicaledonicus* is a robust species close to *A. orientalis* described by REMY & ROLLET (1960 : 202-204, 224) from Madagascar but also to *argentinensis* described by HANSEN (1902 : 371-374, pl. III, figs 2a-2g) from Argentina and my own *sanctijohni* (SCHELLER, 1989 : 169-172, fig. 3) from the U.S. Virgin Islands. However, in spite of some deficiencies in the description above it is clearly distinct from all of them by a combination of reliable characters : head setae are of medium size (much longer in *sanctijohni*); temporal organs are distinctly shorter than their distance apart (distinctly longer in *orientalis*); no pistils in the temporal organs (*sanctijohni* has); sternite process triangular (anteriorly narrow in *sanctijohni*); posteromedian bulge of the pygidial tergum with a median incision (none in *orientalis* and *argentinensis*); pygidial setae a_1 are about as long as the a_2 ($a_1 > a_2$ in *argentinensis*); setae b_2 about as long as the distance b_1-b_2 (much shorter in *argentinensis* and *sanctijohni*).

Derivatio nominis : a latinization of New Caledonia.

Type locality : Col d'Amieu.



FIGS 2-12. — *Allopaupopus (A.) novicaledonicus* n. sp., holotype ad. ♀. 2 : head, right side, tergal view ; 3 : temporal and fungiform organs, right side, sternal view ; 4 : part of left antenna, sternal view ; 5 : collum segment, median and right part, sternal view ; 6 : tergite VI, posterior part ; 7 : T1 ; 8 : T3 ; 9 : T5 ; 10 : seta of trochanter of 9th pair of legs ; 11 : tarsus of 9th pair of legs ; 12 : pygidium, sternal view (pubescence only partly drawn in 11). Scale : a : 9 ; b : 2, 4, 6, 7, 8 ; c : 3 ; d : 5, 10, 11, 12.

Type material : holotype ♀ adult 9, Col d'Amieu, rainforest, 13.III.1986 (J. BOUDINOT) (MNHN). Paratype juv. 5, st 103a, Mt. Djiaouma, rainforest with *Araucaria*, 1050 m, 165°21'35" E, 21°26'41" S, 26.III.1987 (A. & S. TILLIER) (MNHN).

Allopaupopus (A.) maoriorum Remy, 1956a

(figs 13-20)

Rec. Cant. Mus., 7 (1) : 19-21, figs 1-5.

Description : head. Setae on tergal side of medium length, subcylindrical, annulate, blunt. Relative lengths of setae, 1st row : $a_1 = 10$, $a_2 = 11$; 2nd row : $a_1 = a_2 = 9$, $a_3 = 13$; 3rd row : $a_1 = 13$, $a_2 = 17$; 4th row : $a_1 = 13$, $a_2 = 23$, $a_3 = 20$, $a_4 = 15$. The ratio a_j/a_{j-1} is : 1st row 0.8, 2nd row 0.6, 3rd row 0.9, 4th row 1.1. No pistil in the temporal organs.

Antennae. Segment 4 with 5 setae, all annulate blunt; their relative lengths are : $p = 100$, $p' = 69$, $p'' = 46$, $p''' = 17$, $r = 19$. Globulus g with stalk as long as in the New Zealand material.

Trunk. Setae of collum segment simple, subclavate, annulate, blunt; lateral setae 2.9 times as long as submedian ones; sternite process narrow with a deep anterior incision. Setae on tergites cylindrical, annulate, blunt; there are 4 + 4 on tergite I, 6 + 6 on II-IV, 6 + 4 on V and 4 + 2 on VI. Relative lengths of trichobothria : $T1 = 100$, $T2 \approx 100$, $T3 = 102$, $T4 = 105$, $T5 = 137$. All but $T3$ with thin axes; they have simple, oblique, straight pubescence hairs. Penes conical with rounded tip, 1.5 times as long as wide; seta 0.5 of the length of penis. In subadult specimens they have two circular transverse constrictions dividing them into 3 rings.

Legs. Tarsus of leg 9 3.2 times as long as its largest width; proximal seta tapering, annulate, pointed, 2.3 (not 1.5) times as long as distal seta which is subcylindrical, annulate, blunt. Cuticle of tarsus glabrous.

Pygidium. Tergum. Posterior margin rounded with a median bulge having a shallow median incision. Relative

lengths of setae : $a_1 = 100$, $a_2 = 332$, $a_3 = 630$, $st = 17$. st cylindrical (not clavate).

Sternum. Setae b_j cylindrical without distinct ovoid endswelling.

Remark : the characters of the New Caledonian specimens agree well with the original description, but some details which were not described nor depicted by REMY are described above from a well preserved specimen.

Distribution : this species seems to be rare. It has been reported from two sites in New Zealand (REMY, 1956a : 19, and 1956b : 216), from one site in southern Chile (SCHELLER, 1968 : 280) and from a hothouse in Switzerland (REMY, 1957a : 160).

Material examined : 10 adults 9 (5 ♂♂, 5 ♀♀), 4 subadults 8 (2 ♂♂, 1 ♀, 1 sex?), st 103a, Mt. Djiaouma, rainforest with *Araucaria*, 1050 m, 165°21'35" E, 21°26'41" S, 2.IV.1987 (A. & S. TILLIER) (MNHN).

Allopaupopus (A.) sp.

Five specimens from the same place as the preceding species, Mt. Djiaouma (st 103 a), belong to a new *Allopaupopus* species very close to my own *snideri* from South Carolina in the U.S. and *mahafalus* Remy from Madagascar. Because they all are first instar larvae the species cannot be described.

Material examined : 5 juv., st 103a, Mt. Djiaouma, rainforest with *Araucaria*, 1050 m, 165°21'35" E, 21°26'41" S, 2.IV.1987 (A. & S. TILLIER) (MNHN).

Subgenus *DECAPAUROPUS* Remy

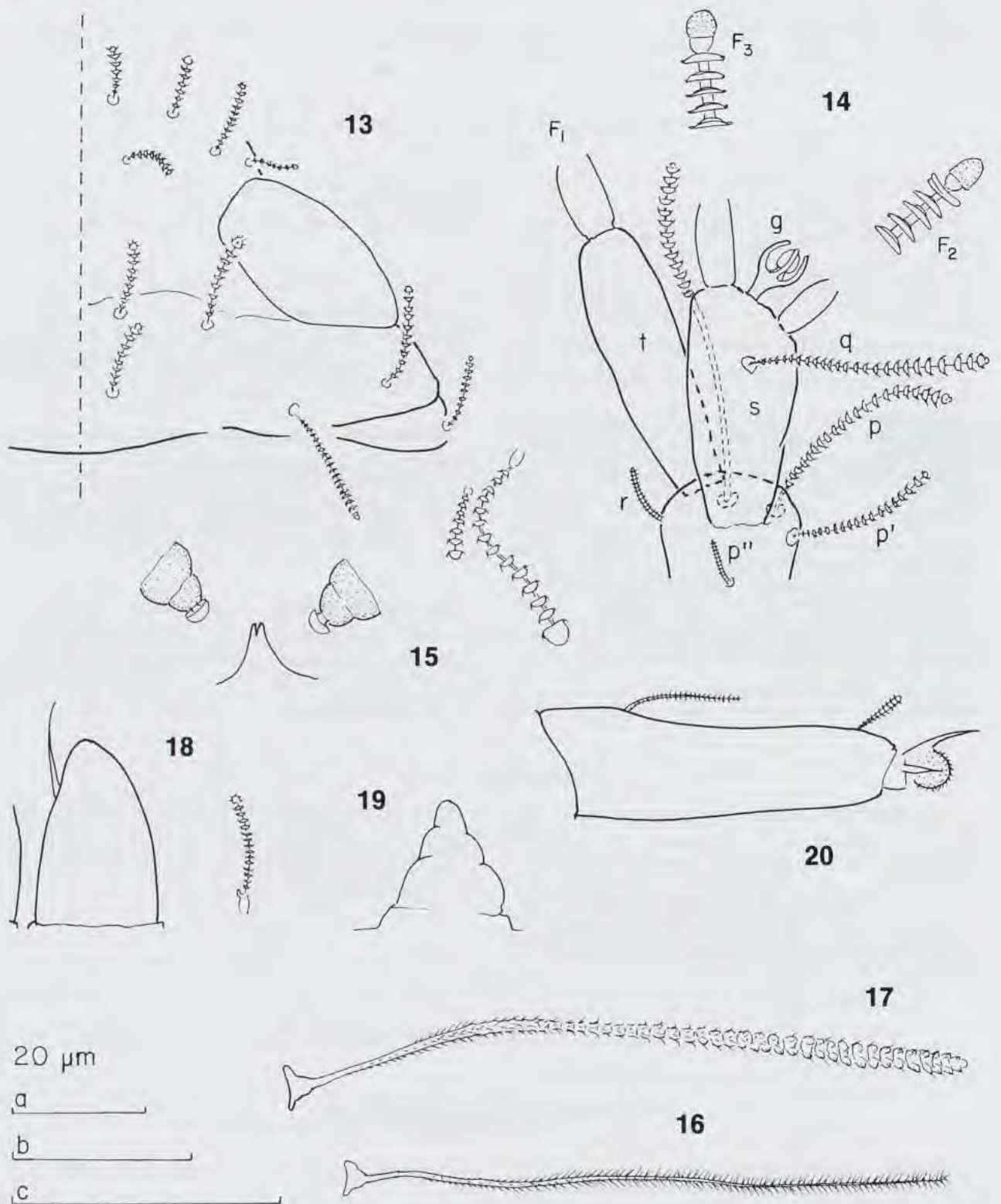
Allopaupopus (D.) minusculus n. sp.

(figs 21-29)

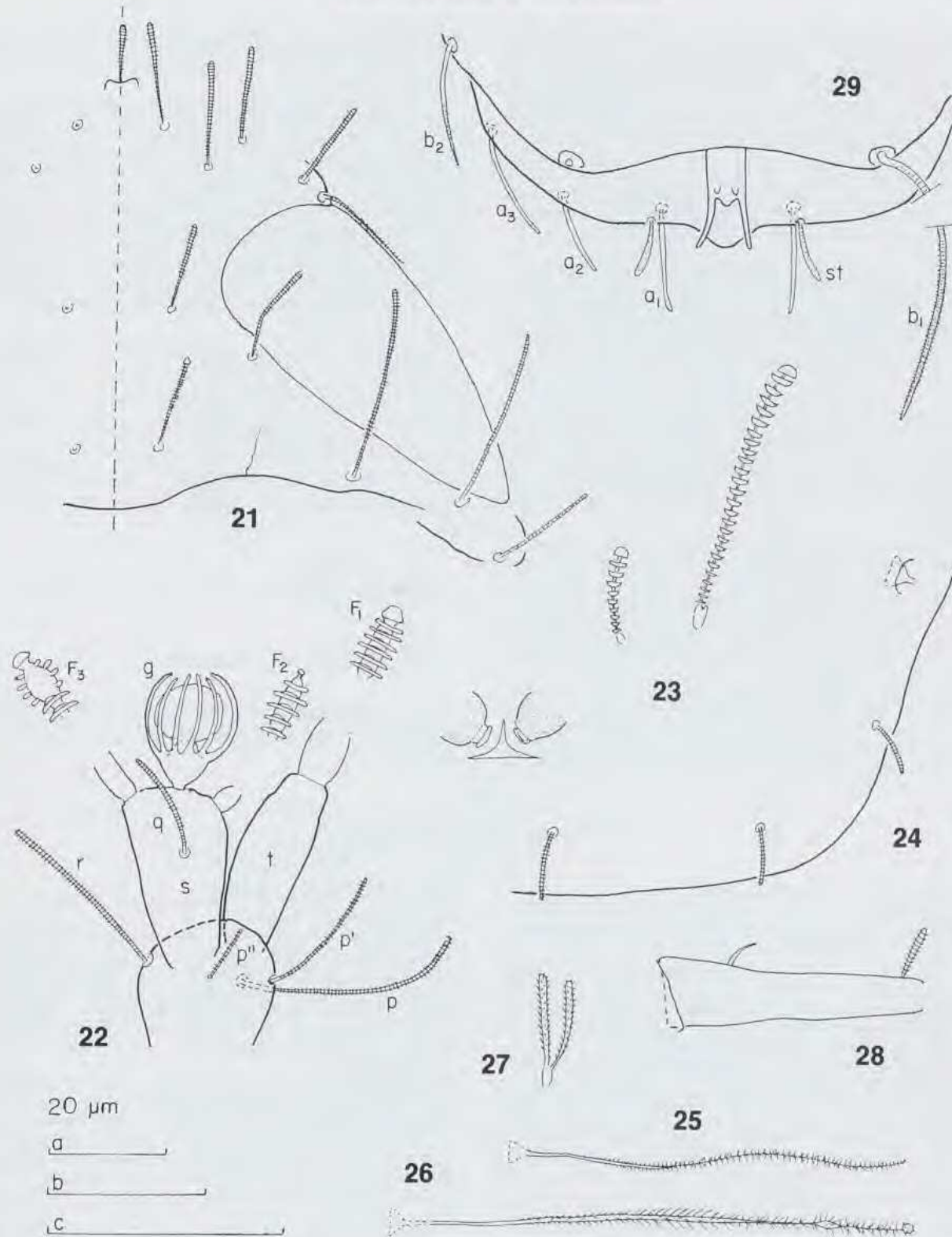
Description : length 0.47 mm. Head. Tergal setae of medium length, thin, straight, subcylindrical, densely striate, blunt. Relative lengths of setae, 1st row : $a_1 = 10$, $a_2 = 9$; 2nd row : $a_1 = 10$, $a_2 = 9$, $a_3 = 11$; 3rd row : $a_1 = 8$, $a_2 = 10$; 4th row : $a_1 = 9$, $a_2 = 19$, $a_3 = 18$, $a_4 = 12$. The ratio a_j/a_{j-1} is : 1st row 1.2, 2nd row 0.6, 3rd row 0.8, 4th row 1.1. Length of temporal organs 1.9 times as long as

their shortest distance apart; no pistil. Head cuticle glabrous.

Antennae. Segment 4 with 4 cylindrical, densely striate, blunt setae; relative lengths : $p = 100$, $p' = 65$, $p'' = 25$, $r = 80$. Tergal seta p 1.3 times as long as sternal branch t ; the latter 2.5 times as long as wide and as long as sternal branch s which is 1.9 times as long as wide, anterodistal



FIGS 13-20. — *Allopaupopus (A.) maoriorum* REMY. — 13 : head, right side, tergal view ; 14 : right antenna, sternal view ; 15 : collum segment, median and left part, sternal view ; 16 : T2 ; 17 : T3 ; 18 : penis and seta of coxa, ad. ; 19 : penis, subad. 8 ; 20 : tarsus of 9th pair of legs. Scale : a : 16 ; b : 13, 17, 18, 19, 20 ; c : 14, 15.



FIGS 21-29. — *Allopauropus (D.) minusculus* n. sp., holotype ad. ♀. 21 : head, right side, tergal view ; 22 : left antenna, sternal view ; 23 : collum segment, median and left part, sternal view ; 24 : tergite VI, posterior part ; 25 : T1 ; 26 : T3 ; 27 : seta of coxa of the 9th pair of legs ; 28 : tarsus of the 9th pair of legs ; 29 : pygidium, median and right part, sternal view. Scale : a : 25, 26 ; b : 24, 27, 28 ; c : 21, 22, 23, 29.

corner only slightly truncate. Seta q like setae of segment 4, 0.7 of the length of s . Relative lengths of flagella (base segments included) and base segments: $F1 = 100$, $bs_1 = 8$; $F2 = 34$, $bs_2 = 3$; $F3 = 82$, $bs_3 = 7$. $F1$ 4.5 times as long as t , $F2$ and $F3$ 1.5 and 3.7 times as long as s respectively; distal calyces subhemispherical, those of $F2$ extremely small; distal part of flagellum axis cylindrical in $F1$, a little fusiform in $F2$ and broadly fusiform in $F3$; basal segments of varying size, those of $F1$ thickest, those of $F2$ very small. Globulus g large, somewhat pear-shaped, 1.3 times as long as wide; about 10 bracts; capsule subspherical; g 1.3 times as wide as the largest diameter of t . Antenna glabrous.

Trunk. Setae of collum segment simple or with extremely short secondary branches, somewhat clavate, annulate, blunt; lateral ones 3 times as long as submedian ones; sternite process very narrow, pointed, glabrous; appendages with granular cuticle. Setae on tergites like on head; setae on tergite VI a little shorter than those on more anterior tergites. There are 4 + 4 setae on tergite I, 6 + 6 on II-IV, 4 + 4 on V and VI. Submedian posterior setae on tergite VI 0.3 of their distance apart and a little shorter than pygidial a_1 . Relative lengths of trichobothria: $T1 = 100$, $T2 = 107$, $T3 = T4 = 128$, $T5 = 161$. All with thin axes, those of $T3$ thickest and with two small swellings, one apical and one subapical, on $T3$; pubescence of straight simple hairs, mostly oblique but erect on distal parts of $T1$ - $T3$. Cuticle of tergites glabrous.

Legs. Setae on coxa and trochanter of leg 9 subequal, furcate, subcylindrical, blunt, with oblique pubescence; branches subequal. More anteriorly these setae are simple. Tarsus of leg 9 3.9 times as long as its largest width. Proximal seta short, cylindrical, tapering, pointed, glabrous; distal one clavate, blunt, striate; the former a little more than 0.1 of the length of tarsus and 0.7 of the length of distal seta. Cuticle of tarsus minutely granular.

Pygidium. Tergum. Posterior margin rounded with a distinct median bulge. Relative lengths of setae: $a_1 = 100$, $a_2 = 77$, $a_3 = 105$, $st = 55$, a_1 , a_2 and a_3 cylindrical, tapering, curved inwards, glabrous, a_1 straight, a_2 and a_3 converging; st a little clavate, curved inwards, diverging, minutely granu-

lar. Distance a_1 - a_1 1.3 times as long as a_1 ; distance a_1 - a_2 0.9 times the distance a_2 - a_3 ; distance st - st 2.6 times as long as st and 1.1 times as long as distance a_1 - a_1 . Cuticle glabrous.

Sternum. Posterior margin with shallow indentation between b_1 . Relative lengths of setae ($a_1 = 100$): $b_1 > 330$, $b_2 = 117$. b_1 cylindrical, distally tapering, with short oblique pubescence; b_2 cylindrical, tapering, pointed, proximal 2/3 glabrous, distally minutely granular. b_1 as long as their distance apart, b_2 0.7 of the distance b_1 - b_2 . Anal plate rectangular with straight sides and two posterolateral, subcylindrical, tapering appendages which are as long as the plate and directed backward; between them the plate is shaped into a triangular posterior process, anterior to which there are on the sternal side two short appendages about as long as wide; plate glabrous, posterior appendages distally granular.

Discussion : the new species may be a relative of REMY'S *A. (D.) ligulifer* (1948 b : 569-570, fig. 2) from East Africa and *lupiger* (1959 : 168-169, fig. 9) from Mauritius but is easily distinguished from them by e. g. the shape of the anal plate and styli, the antennal globulus and the proximal seta on the tarsus of the 9th pair of legs.

Derivatio nominis : from Latin *minusculus* = less (body size).

Type locality : Col d'Amieu.

Type material : holotype ♀ adult 9, Col d'Amieu, in leaf litter, 10.III.1986 (J. BOUDINOT) (MNHN).

Allopaupopus (D.) tillierae n. sp.

(figs 30-36)

Description : length 0.69 mm. Head. Tergal setae of medium length, thin, subcylindrical, densely striate, blunt. Relative lengths, 1st row: $a_1 = 10$, $a_2 = 8$; 2nd row: $a_1 = 10$, $a_2 = a_3 = 16$; 3rd row: $a_1 = 10$, $a_2 = ?$; 4th row: $a_1 = 11$, $a_2 = a_3 = 18$, $a_4 = 10$. The ratio a_1/a_1 is: 1st row 1.1, 2nd row 0.7, 3rd row 1.1, 4th row 1.4. In tergal view temporal organs are triangular, their length 1.5 times as long as their shortest distance apart; in posterior half a small subglobular pistil. Head cuticle glabrous.

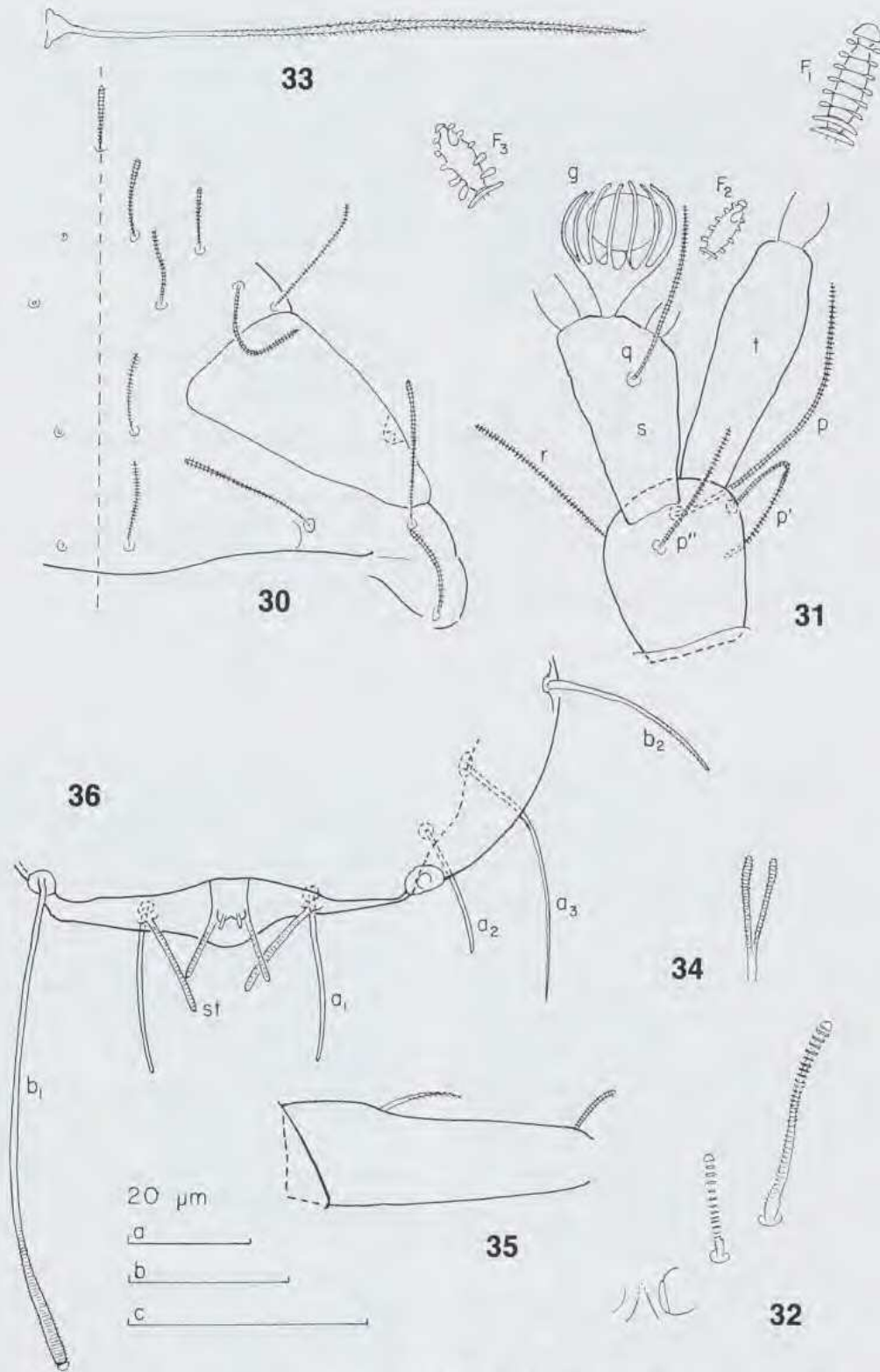
Antennae. Segment 4 with 4 cylindrical densely striate setae; relative lengths: $p = 100$, $p' = 65$, $p'' = 52$, $r = 65$. Tergal seta p 1.1 times as long as tergal branch t . The latter 3 times as long as wide and 1.2 times as long as sternal branch s , which is 1.9 times as long as wide, anterodistal corner distinctly truncate. Seta q like setae of segment 4, 0.9 shorter than s . Relative lengths of flagella (base segments included) and base segments: $F1 = 100$, $bs_1 = 7$; $F2 = 37$, $bs_2 = 4$; $F3 = 75$, $bs_3 = 6$. $F1$ 3.2 times as long as t , $F2$ and $F3$ 1.5 and 3.0 times as long as s respectively; distal calyces hemispherical, those of $F2$ and $F3$ very small; distal part of flagellum axis narrowly fusiform in $F1$, more distinctly fusiform in $F2$ and $F3$; basal segments of varying size, those of $F1$ the thickest, those of $F2$ the smallest. Globulus g large, 1.1 times as long as wide, about 15 bracts; capsule somewhat

flattened; g 1.4 times as wide as largest diameter of t . Antenna glabrous.

Trunk. Setae of collum segment simple, subcylindrical, annulate, blunt; lateral ones twice as long as submedian ones; sternite process narrow glabrous (apical part not studied); appendages subspherical glabrous. Tergal side of body not studied (covered with opaque particles). Trichobothria $T2$, $T3$ and $T5$ with simple axes, $T3$ the thickest; pubescence of straight simple hairs, mostly oblique, erect only on distal parts.

Legs. Setae on coxa and trochanter of leg 8 subequal, furcate, cylindrical, blunt, densely striate; branches subequal. More anteriorly these setae are simple. Tarsus of leg 8 2.6 times as long as its largest width. Proximal seta tapering, pointed, with very short pubescence; distal seta cylindrical, striate, blunt; the former 0.3 length of tarsus and 1.5 times as long as distal seta. Cuticle of tarsus glabrous.

Pygidium. Tergum. Posterior margin rounded with a low median bulge. Relative lengths of setae: $a_1 = 100$, $a_2 = 78$, $a_3 = 161$, $st = 64$; all cylindrical, all but st very thin, a_1 straight and a little curved inwards, a_2 and a_3 diverging, curved inwards; a_1 , a_2 and a_3 glabrous, st minutely striate. Distance a_1 - a_1 as long as a_1 ; distance a_1 - a_2 1.8 times as long



Figs 30-36. — *Allopauropus (D.) tillierae* n. sp., holotype ad. ♂. 30 : head, right side, tergal view ; 31 : left antenna, sternal view ; 32 : collum segment, median and left part, sternal view ; 33 : T3 ; 34 : seta of trochanter of the 8th pair of legs ; 35 : tarsus of the 8th pair of legs ; 36 : pygidium, median and left part, sternal view. Scale : a : 33 ; b : 30, 34, 35 ; c : 31, 32, 36.

as distance a_2-a_3 ; distance $st-st$ 1.6 times as long as st and as long as distance a_1-a_2 . Cuticle glabrous.

Sternum. Posterior margin with a shallow indentation between b_1 . Relative lengths of setae ($a_1 = 100$): $b_1 = 292$, $b_2 = 114$. b_1 cylindrical, increasing slightly in width towards apex, blunt, proximal 2/3 glabrous, distal part minutely striate; b_2 strongly diverging, tapering, pointed, distal part with very short pubescence. b_1 1.3 times as long as their distance apart, b_2 0.8 of the distance b_1-b_2 . Anal plate 1.3 times longer than broad with almost straight lateral margins and a median indentation in posterior margin between two small submedian posterior lobes on sternal side; 4 appendages directed backwards, 2 protruding from posterolateral corners, 1.5 times as long as plate, straight, cylindrical, diverging, minutely striate and 2 short ones protruding backwards from the sternal lobes; plate glabrous.

Discussion : *A. tillierae* is close to my own *A. robinsonius* (SCHELLER, 1968 : 287-289, fig. 6) from Chile but there are many clear distinctive characters, e. g. the posterior part of the anal plate (sternal appendages subcylindrical and glabrous in *tillierae*, pointed in *robinsonius*), the shape of the tergal antennal branch (3 times as long as wide in *tillierae*, 1.7 in *robinsonius*), the shape of the distal part of the $T3$ (thin in *tillierae*,

with endswelling in *robinsonius*), the shape of the setae on the coxa and trochanter (simple on anterior legs in *tillierae*, furcate in *robinsonius*). The species may also have affinities with the West Palaearctic and Nearctic *A. broelemanni* Remy (1935 : 211-212; 1961 : 151-153, fig. 1-3), *dionysii* Remy (1956e : 149-151, fig. 8) from La Réunion and *acuminatus* Remy (1947 : 74-76, fig. 5) from North Africa but they are not so strong as with *robinsonius*.

Derivatio nominis : dedicated to Annie TILLIER who collected and sorted out most of the material here studied.

Type locality : Mt. Djiaouma.

Type material : holotype ♂ subadult 8, st 103a, Mt. Djiaouma, rainforest with *Araucaria*, 1050 m, 165°21'35" E, 21°26'41" S, 2.IV.1987 (A. & S. TILLIER) (MNHN).

Allopauropus (D.) ovatus n. sp.

(figs 37-45)

Description : length (0.36-) 0.46 (-0.52) mm. Head. Tergal setae short, subcylindrical, densely striate, blunt. Relative lengths of setae, 1st row : $a_1 = 10$, $a_2 = 9$ (-10); 2nd row : $a_1 = 10$, $a_2 = (15-)$ 16, $a_3 = 15$ (-16); 3rd row : $a_1 = 8$ (-9), $a_2 = (10-)$ 11; 4th row : $a_1 = 9$ (-10), $a_2 = 14$ (-16), $a_3 = ?$, $a_4 = (15-)$ 16 (-18). The ratio a_1/a_2-a_1 is : 1st row 0.8, 2nd row 0.4, 3rd and 4th rows 0.6. Temporal organs (1.3-) 1.4 times as long as their shortest distance apart; no pistil. Head cuticle glabrous.

Antennae. Segment 4 with 5 cylindrical densely striate setae; relative lengths : $p = 100$, $p' = 46$, $p'' = 35$ (-38), $r = (83-)$ 108, $u = (13-)$ 15. Tergal seta p 1.6 (-1.9) times as long as tergal branch t . The latter very rounded, 1.4 (-1.5) times as long as wide and 0.9 of the length of sternal branch s which is rounded too (1.2-), 1.4 times as long as wide, anterodistal corner only a little truncate. Seta q cylindrical, densely striate, 1.1 times as long as s . Relative lengths of flagella (base segments included) and base segments : $F1 = 100$, $bs_1 = 11$; $F2 = (41-)$ 46, $bs_2 = (6-)$ 7; $F3 = (83-)$ 86, $bs_3 = (8-)$ 9. $F1$ 4.5 (-4.8) times as long as t , $F2$ and $F3$ 1.9 and 3.5 (-3.7) times as long as s respectively; distal calyces small, distal part of flagellum axis distinctly fusiform; basal segments of $F2$ the smallest. Globulus g proportionally large, 1.1 times as long as wide with (9-) 10 bracts; capsule flattened; g as wide as (—) 1.1 times as wide as) largest diameter of t . Antenna glabrous.

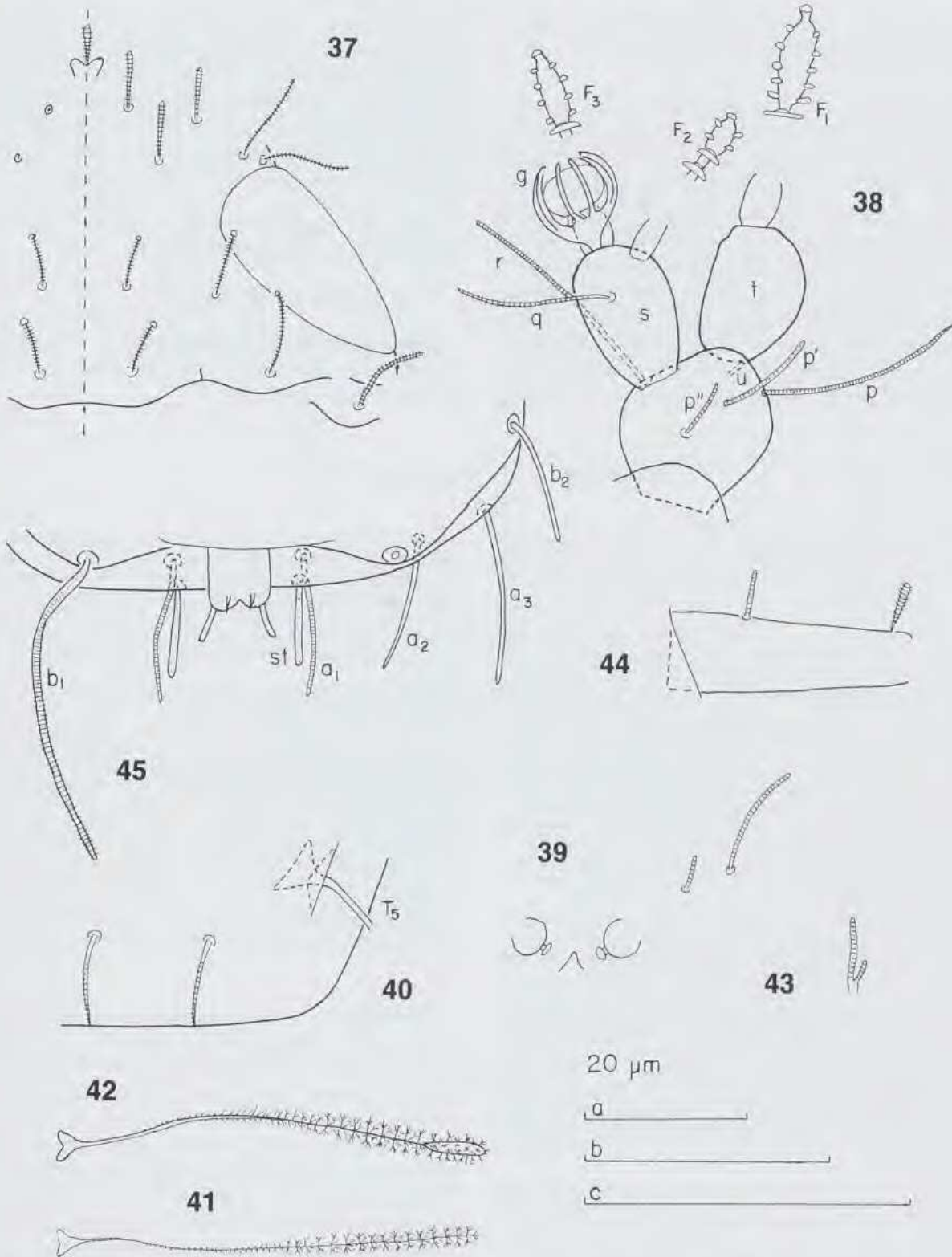
Trunk. Setae of collum segment thin, simple, cylindrical, striate, blunt; lateral ones (3.2-) 3.3 times as long as submedian ones; sternite process small, blunt, glabrous; appendages subspherical with small stalked terminal segment. Setae on tergites short, cylindrical, striate, blunt; those on posterior tergites a little shorter than those on anterior tergites, 4 + 4 setae on tergite I, 6 + 6 on II-IV, ? on V and 4 + 2 on VI. Submedian posterior setae on tergite VI curved, tapering, distally granular, 0.7 of their distance apart and

(0.7-) 0.8 of pygidial setae a_1 . Relative lengths of trichobothria : $T1 = 100$, $T2 = (106-)$ 113, $T3 = 102$ (-110), $T4 = 118$ (-121), $T5 = 143$ (-145). All with thin axes and straight, simple, oblique — erect pubescence hairs on $T5$ and on proximal half of $T1-T4$; the distal halves of the latter with branched erect hairs, in whorls on $T1-T3$ but more irregularly inserted on $T4$; $T3$ with subcylindrical endswelling covered with branched pubescence hairs.

Legs. Setae on coxa and trochanter of leg 9 subequal, furcate, cylindrical, striate, blunt; secondary branch 1/4 of the length of primary branch. More anteriorly these setae are simple. Tarsus of leg 9 (2.2-) 2.4 (-2.8) times as long as largest width. Proximal seta cylindrical, feebly striate, blunt; distal one clavate striate; the former (0.2-) 0.3 of the length of tarsus and as long as (—) 1.2 times as long as) distal seta. Cuticle of tarsus glabrous.

Pygidium. Tergum. Posterior margin straight. Relative lengths of setae : $a_1 = 100$, $a_2 = (71-)$ 91, $a_3 = (122-)$ 136, $st = 41$ (-55); all are cylindrical blunt, a_1 and a_3 straight curved inwards, a_2 converging curved inwards, st straight; st granular, a_1 minutely striate, a_2 and a_3 glabrous. Distance a_1-a_2 0.9 of the length of a_1 ; distance a_1-a_3 1.3 (-1.6) times as long as distance a_2-a_3 ; distance $st-st$ 1.5 (-1.8) times as long as st and about as long as distance a_1-a_1 . Cuticle glabrous.

Sternum. Posterior margin between b_1 with broad shallow indentation and a median very low and broad bulge. Relative lengths of setae ($a_1 = 100$): $b_1 = (173-)$ 200 (-233), $b_2 = 73$ (-88). b_1 and b_2 cylindrical, striate, blunt, b_2 a little diverging. The former (as long as —) 1.1 times as long as their distance apart, b_2 (0.7-) 0.8 of the distance b_1-b_2 . Anal plate about as broad as long with parallel lateral margins and posteriorly two rounded lobes separated by a broadly V-shaped incision. There are 4 posterior glabrous appendages; two posterolateral ones which are diverging, cylindrical, blunt and two



FIGS 37-45. — *Allopauropus (D.) ovatus* n. sp., holotype ad. ♀. 37 : head, right side, tergal view ; 38 : left antenna, sternal view ; 39 : collum segment, median and left part, sternal view ; 40 : tergite VI, posterior part ; 41 : T1 ; 42 : T3 ; 43 : seta of coxa of the 9th pair of legs ; 44 : tarsus of the 9th pair of legs ; 45 : pygidium, sternal view. Scale : a : 41, 42 ; b : 37, 39, 40, 43, 44, 45 ; c : 38.

short pointed ones protruding from the sternal sides of the posterior lobes; posterolateral appendages (0.5-) 0.6 of the plate length. Plate glabrous.

Discussion : *A. (D.) ovatus* is close to *A. (D.) milloti* Remy (1945 : 136-137, fig. 4) which has a subcosmopolitan range and to *A. millotianus* Leclerc (1953 : 398-399, fig. 3) known from France, Italy and Réunion. It differs from both in several respects, e. g. from *milloti* in having smaller endswelling with branched pubescence hairs on the *T3* (not ovoid with simple pubescence hairs); long, straight, cylindrical styli (not short, clavate, converging); and in the shape of the appendages of the anal plate (longer ones cylindrical glabrous, not clavate striate; shorter

ones distinct, not extremely thin). From *A. millotianus* the following distinctive characters may be emphasized: lengthened endswelling of the *T3* (not globular); shape of the anal plate and the styli (see above under *milloti*); glabrous surface of the pygidial setae a_2 and a_3 (not pubescent) and ratio $F2/F3$ (0.5, not 0.3).

Derivatio nominis : from Latin *ovatus* = egg-shaped (antennal branches).

Type locality : Col d'Amieu.

Type material : holotype ♀ adult 9, 2 paratypes ♀♀ adult 9, Col d'Amieu, in leaf litter, 10.iii.1986 (J. BOUDINOT) (MNHN).

Allopaupopus (D.) macropygus n. sp.

(figs 46-55)

Description : length (0.60-) 0.72 mm. Head. Tergal setae short, a little clavate, annulate, blunt. Relative lengths. 1st row : $a_1 = 10$, $a_2 = 11$; 2nd row : $a_1 = 13$, $a_2 = (11-)$ 13, $a_3 = 10$ (-11); 3rd row : $a_1 = 11$ (-13), $a_2 = (16-)$ 17; 4th row : $a_1 = 11$ (-14), $a_2 = (19-)$ 23, $a_3 = 14$ (-16), $a_4 = (20-)$ 23. The ratio a_j/a_1-a_j is : 1st row (0.8-) 0.9, 2nd row 0.9, 3rd row (0.7-) 0.8, 4th row (0.9-) 1.1. Temporal organs small, short, length 0.6 of their shortest distance apart; no pistil.

Antennae. Segment 4 with 5 setae, all cylindrical, striate, blunt; relative lengths : $p = 100$, $p' = 45$ (-48), $p'' = 48$ (-52), $r = 60$ (-63), $u = 9$ (-11). Tergal seta p 1.4 times as long as tergal branch t . The latter 1.5 times as long as wide and 0.8 of the length of sternal branch s which is 1.5 times as long as wide, anterodistal corner distinctly truncate. Seta q like setae of segment 4, 1.3 times as long as s . Lengths of flagella not studied. Distal calyces subhemispherical and of the same size, bs_2 much smaller than bs_1 and bs_3 . Globulus g lengthened, 1.6 times as long as wide with 6 bracts; capsule subspherical with flattened base; width of g 0.7 of the largest diameter of t . Antenna glabrous.

Trunk. Setae of collum segment simple, cylindrical, striate, blunt; lateral ones twice as long as submedian ones; sternite process and appendages not studied. Seta on tergites cylindrical, annulate, blunt. 4 + 4 setae on tergite I, 6 + 6 on II-V, 4 + 2 on VI. Submedian posterior setae on tergite VI 0.5 of their distance apart and 0.9 of the length of pygidial a_1 . Relative lengths of trichobothria : $T1 = 100$, $T2 = (104-)$ 108, $T3 = (93-)$ 104 (-106), $T4 = (103-)$ 105, $T5 = (111-)$ 118 (-122). All have thin simple axes with short, straight, simple, oblique pubescence hairs on proximal half but longer, erect, branched hairs on distal half; *T3* with large ovoid endswelling covered with short, erect, mostly branched pubescence hairs; swelling > 0.1 of the length of *T3*. Cuticle of tergites glabrous.

Legs short. Seta on coxa of leg 9 simple, subclavate, annulate, blunt; seta of trochanter furcate, subcylindrical, annulate, blunt; primary branch 1.3 times as long as secondary branch. More anteriorly these setae are simple cylindrical. Tarsus of leg 9 (2.3-) 2.4 times as long as its largest width. Setae cylindrical, striate, tapering; proximal one 0.2 of the length of tarsus and 0.6 of the length of distal seta. Cuticle of tarsus glabrous.

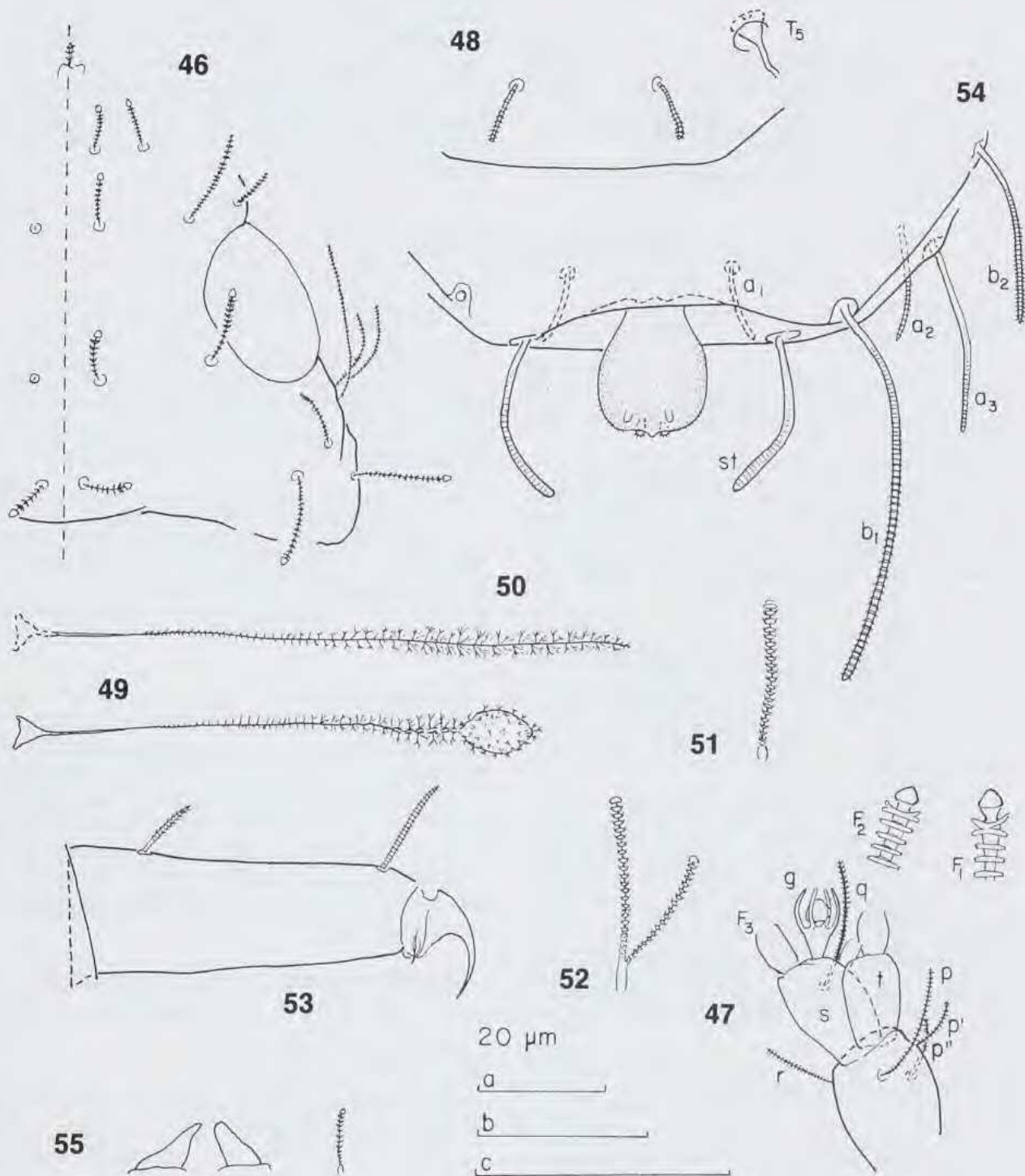
Pygidium. Tergum. Posterior margin straight. Relative lengths of setae : $a_1 = 100$, $a_2 = 150$ (-154), $a_3 = (233-)$ 254

(-265), $st = (206-)$ 217; they are all cylindrical, distal part densely striate blunt; a_1 and a_3 diverging, the former curved outwards, the latter inwards; a_2 and st curved inwards, the latter thicker than other tergal setae. Distance a_1-a_1 (2.1-) 2.2 times as long as a_1 ; distance a_1-a_2 (4.1-) 4.3 times as long as distance a_1-a_3 ; distance $st-st$ (1.4-) 1.5 times as long as st and (1.4-) 1.5 (-1.6) times as long as distance a_1-a_1 . Cuticle glabrous.

Sternum. Posterior margin with shallow indentation between b_1 . Relative lengths of setae ($a_1 = 100$) : $b_1 = (480-)$ 494 (-510), $b_2 = (242-)$ 245 (-251). These setae are cylindrical, annulate — striate, blunt. b_1 as long as their distance apart, b_2 as long as distance b_1-b_2 . Anal plate proportionally large, narrowest at base, broadly spatulate with rounded posterolateral and posterior margins; the latter with a very small median triangular process; 4 very short, submedian, cylindrical, blunt processes near the posterior margin, two of which are tergal and close to each other, and the other two are sternal and lie more apart; plate and appendages granular.

Stage subad. 8. Penes conical, blunt, converging. Pygidial setae d_2 cylindrical, annulate, blunt, shorter than setae a_1 ; no d_1 .

Discussion : the new species and my own *A. (D.) quadridentatus* (SCHELLER, 1982 : 256-258, fig. 8) from the Seychelles have in common several features which may indicate affinity but exhibit distinctive characters. Thus *A. macropygus* has no pistils in the temporal organs (*quadridentatus* has), a simple distal seta on the tarsus of the 9th pair of legs (furcate in *quadridentatus*), branched pubescence hairs on the trichobothria (simple in *quadridentatus*) and very short appendages and minute pubescence on the anal plate (longer appendages and very sparse and long pubescence hairs in *quadridentatus*). *A. macropygus* may be related also to *A. intonsus* described



Figs 46-55. — *Allopauopus (D.) macropygus* n. sp., holotype ad. ♀. 46 : head, right side, tergal view ; 47 : left antenna, tergal view ; 48 : tergite VI, posterior part ; 49 : T1 ; 50 : T3 ; 51 : seta of coxa of the 9th pair of legs ; 52 : seta of trochanter of the 9th pair of legs ; 53 : tarsus of 9th pair of legs ; 54 : pygidium, median and left part, sternal view ; 55 : penes, subad. 8, paratype. Scale : a : 55 ; b : 49, 50 ; c : 46, 47, 48, 51, 52, 53, 54.

by REMY from Madagascar (1956c : 184-186, fig. 40) and later reported from USA, Sri Lanka and Japan.

Derivatio nominis : from Greek *macro* = large and *pygus* = tail (anal plate).

Type locality : Rivière Bleue valley, 170 m.

Type material : holotype ♀ adult 9, st 251g,

Rivière Bleue, rainforest on slope upon ultra-maffic rocks, 170 m, 166°40'01" E, 22°05'59" S, 18.III.1987 (A. & S. TILLIER) (MNHN). Paratypes : 2 ♀♀ adult 9, 1 ♂ subadult 8, 1 ♀ subadult 8, 3 juv. 6, 3 juv. 5, 1 juv. 3, same data as the holotype ; 2 ♀♀ adult 9, st 208a, south of Mt. Néponkoui, rainforest, 490 m, 165°53'52" E, 21°26'33" S, 30.X.1986 (A. & S. TILLIER) (MNHN).

Allopauropus (D.) radiosus n. sp.

(figs 56-64)

Description : length = 0.41 mm. Head. Tergal setae short, a little clavate, annulate, blunt. Relative lengths, 1st row : $a_1 = 10$, $a_2 = 8$; 2nd row : $a_1 = a_2 = 10$, $a_3 = ?$; 3rd row : $a_1 = 10$, $a_2 = 11$; 4th row : $a_1 = 10$, other setae not available for study. The ratio $a_1 / a_2 - a_1$ is : 1st row 0.8, 2nd and 3rd rows 0.6, 4th row 0.5. Temporal organs long, about as long as their shortest distance apart; no pistil. Head cuticle glabrous.

Antennae. Segment 4 with 4 setae, all cylindrical, blunt ; p , p' and p'' annulate, r striate ; relative lengths $p = 100$, $p' = 33$, $p'' = 40$, $r = 34$. Tergal seta p 1.5 times as long as tergal branch t . The latter 1.5 times as long as wide and as long as sternal branch s which is 1.2 times as long as wide with distinct anterior truncation. Seta q like setae of segment 4, 1.4 times as long as s . Relative lengths of flagella (base segments included) and base segments : $F1 = 100$, $bs_1 = 7$; $F2 = 33$, $bs_2 = 4$; $F3 = 70$, $bs_3 = 8$. $F1$ 6.1 times as long as t , $F2$ and $F3$ 2.0 and 4.3 times as long as s respectively ; distal calyces hemispherical, those of $F2$ smaller than those of $F1$ and $F3$; distal part of flagellum axes subcylindrical ; basal segments of varying shape and size : bs_1 and bs_2 barrel-shaped, bs_1 large, bs_2 small ; bs_3 cylindrical and longer. Globulus g large, 1.1 times as long as wide, 0.8 time the length of s and 1.1 times as wide as largest diameter of t ; about 11 bracts, capsule large only very little flattened. Antenna glabrous.

Trunk. Setae of collum segment simple, cylindrical, densely annulate, blunt ; lateral ones 2.6 times as long as submedian ones ; sternite process digitiform with small base ; appendages transversely wrinkled, glabrous. Setae on tergites short. Submedian posterior setae on last tergite clavate striate ; length 0.1 of their distance apart and 0.7 of pygidial a_1 . Relative lengths of trichobothria : $T1 = 100$, $T2 = 123$, $T3 = 104$, $T5 = 136$ and 142. All have thin axes, those of $T3$ the thickest and with a large apical swelling ; proximal pubescence hairs short, simple, obliquely erect, on distal half of all trichobothria branched hairs except on the endswelling of $T3$ which has short, simple, straight, erect hairs. Cuticle of tergites glabrous.

Legs. Seta on coxa of last pair of legs simple, cylindrical, annulate, blunt ; seta of trochanter of similar shape but furcate. More anteriorly these setae are like on coxa of the last pair of legs. Tarsus of leg 6 tapering, 2.5 times as long as its largest width ; setae cylindrical blunt, proximal one annulate, distal one striate ; proximal seta a little more than 0.1 of the length of tarsus and 0.5 of the length of distal seta. Cuticle of tarsus glabrous.

Pygidium. Tergum. Posterior margin rounded with small bulges just outside the a_1 . Relative lengths of setae : $a_1 = 100$, $a_2 \approx 140$, $a_3 = 343$, $st \approx 230$; a_1 , a_2 and a_3 curved inwards, st curved anteriorly ; a_1 clavate, converging, distally granular ; a_2 cylindrical, somewhat striate, curved inwards, diverging ; a_3 like a_2 but tapering ; st tapering, converging, glabrous. Distance $a_1 - a_1$ 3.9 times as long as a_1 ; distance $a_1 - a_2$ 2.5 times as long as distance $a_2 - a_3$; distance $st - st$ 1.9 times as long as st and 1.1 times as long as distance $a_1 - a_1$. Cuticle glabrous.

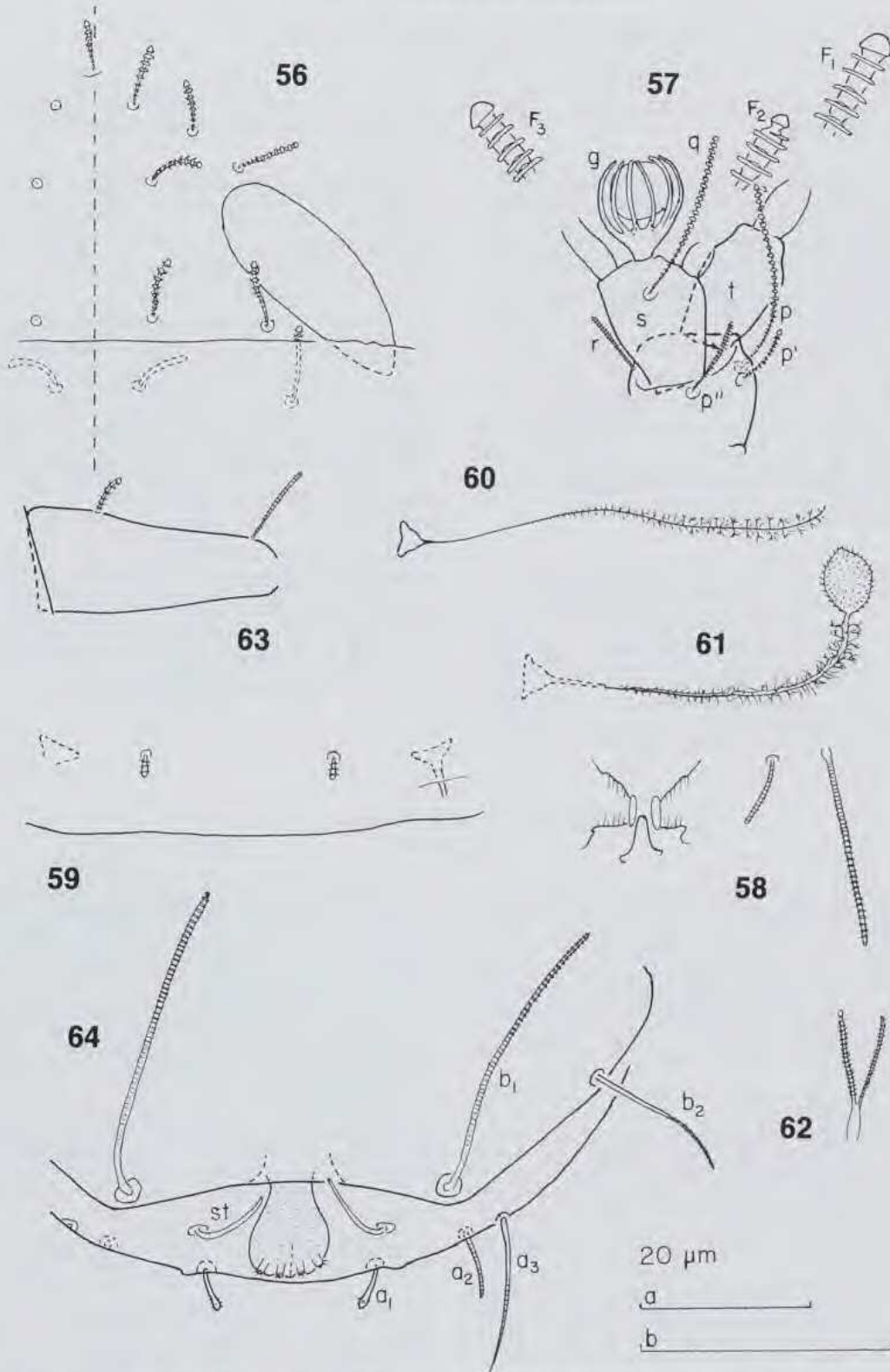
Sternum. Posterior margin with shallow indentation between b_1 . Relative lengths of setae ($a_1 = 100$) : $b_1 = 770$, $b_2 = 340$. These setae are tapering, b_1 distally annulate, b_2 distally striate. b_1 as long as their distance apart, b_2 0.8 of distance $b_1 - b_2$. Anal plate narrowest anteriorly, roundly spatulate with 4 sternal appendages which are equal in size and shape, short, cylindrical, posteriorly directed, diverging, not passing the posterior margin of plate ; plate a little granular.

Discussion : the new species seems to be a close relative of the preceding species. It is easily distinguished from it by its proportionately longer temporal organs, larger and wider antennal globuli, simple pubescence hairs on the endswelling of $T3$, furcate seta on the trochanter of the last pair of legs, by the shape of the pygidial setae st and the posterior margin of the anal plate and also by different arrangement of the appendages of the anal plate.

Derivatio nominis : from Latin *radiosus* = radiant (appendages of the anal plate).

Type locality : Mt. Mé Ori.

Type material : holotype juv. 6, st 29a, Mt. Mé Ori, SE slope, rainforest, 530 m, 165°40'22" E, 21°32'18" S, 7.V.1987 (P. MORDAN, A. & S. TILLIER) (MNHN).



Figs 56-64. — *Allopauopus (D.) radiosus* n. sp., holotype juv. 6. 56 : head, right side, tergal view ; 57 : right antenna, sternal view ; 58 : collum segment, median and left part, sternal view ; 59 : last tergite, posterior part ; 60 : T1 ; 61 : T3 ; 62 : seta of trochanter of the 6th pair of legs ; 63 : tarsus of the 6th pair of legs ; 64 : pygidium, median and left part, sternal view. Scale a : 59, 60, 61 ; b : 56, 57, 58, 62, 63, 64.

Allopauropus (D.) mortensenii (Hansen, 1902)

(figs 65-67)

Vidensk. Meddr dansk naturh. Foren., 1901 : 382-385, pl. 4, fig. 6 a-b, pl. 5, fig. 1 a-c.

Remarks : the following characters, useful for species identification, have not been described formerly. Setae of collum segment simple, cylindrical, annulate; lateral setae 2.0-2.1 times as long as submedian ones; sternite process narrow, margins granular. Penes of subad. 8 small, conical, diverging; seta of coxa of leg 2 simple, subcylindrical, annulate. In ad. 9 penes are roundly conical, 1.3-1.4 times as long as wide, with apical seta at least 0.4 of the length of penes; seta of coxa of leg 2 furcate with cylindrical annulate branches; secondary branch 0.4-0.5 of the length of primary branch.

Distribution : outside the type locality, the island Koh Chang in the Gulf of Siam, the species has been reported by REMY from Egypt (1950 : 36-39), La Réunion (1956e : 134-136), Mauritius (1959 : 153-154) and Sri Lanka (1962 : 133-134). From the latter island it has been reported later too by Scheller (1970 : 42-43). A

doubtful record is HARRISON's *Pauropus burrovesi* from Australia (1914 : 623-624).

Material examined : 1 ♀ adult 9, 2 juv. 3, Mt. Oungoné, leaf litter in rainforest, 4.III.1986 (J. BOUDINOT); 2 ♀♀ adult 9, Rivière Blanche, Mois de Mai rainforest, 18.II.1986 (J. BOUDINOT); 4 ♀♀ adult 9, 1 ♀ subadult 8, 1 ♂ subadult 8, 1 juv. 6, 1 juv. 5, st 251g, Rivière Bleue, rainforest on slope upon ultramaffic rocks, 170 m, 166°40'01" E, 22°05'59" S, 18.III.1987 (A. & S. TILLIER); 1 ♀ adult 9, Col d'Amieu, leaf litter in rainforest, 10.III.1986 (J. BOUDINOT); 2 ♀♀ adult 9, st 208a, south of Mt. Néponkou, rainforest upon ultramaffic rocks, 490 m, 165°53'52" E, 21°26'33" S, 30.X.1986 (A. & S. TILLIER); 1 ♂ adult 9, 1 juv. 6, 1 juv. 3, st 103a, Mt. Djiaouma, rainforest with *Araucaria* upon ultramaffic rocks, 1050 m, 165°21'35" E, 21°26'41" S, 26.III.1987 (A. & S. TILLIER) and 1 ♀ adult 10, 1 ♂ adult 9, 1 ♀ adult 9, same locality, 2.IV.1987 (A. & S. TILLIER) (MNHN).

Allopauropus (D.) sessilis n. sp.

(figs 68-76)

Description : length 0.70 mm. Head. Tergal setae of medium length, thin, straight or a little curved, subcylindrical, densely striate, with a small apical swelling; relative lengths, 1st row : $a_1 = a_2 = 10$; 2nd row : $a_1 = 11, a_2 = 15, a_3 = 12$; 3rd row : $a_1 = 9, a_2 = 12$; 4th row : $a_1 = 7, a_2 = 15, a_3 = 19, a_4 = 14$; lateral group : $l_1 = 16, l_2 = 19, l_3 \approx 20$. The ratio a_1/a_{1-4} is : 1st row ?, 2nd and 3rd rows 0.8, 4th row 1.0. Temporal organs 1.6 times as long as their shortest distance apart; small pistil in hindmost part. Head cuticle glabrous.

Antennae. Segment 4 with 4 cylindrical, densely striate, blunt setae; relative lengths : $p = 100, p' = 43, p'' = 27, r = 19$; p''' reduced to a small knob. Tergal seta p 1.3 times as long as tergal branch t . The latter fusiform, twice as long as wide and as long as sternal branch s which is 1.7 times as long as wide. Anterodistal corner of s distinctly truncate. Seta q like setae of segment 4, 0.9 of the length of s . Relative lengths of flagella (base segments included) and base segments : $F1 = 100, bs_1 = 10$; $F2 = 49, bs_2 = 8$; $F3 = 118, bs_3 = 9$. $F1$ 3.2 times as long as t , $F2$ and $F3$ 1.6 and 3.8 times as long as s respectively; distal calyces flattened; distal part of flagellum axes fusiform; bs_2 a little smaller than bs_1 and bs_3 . Globulus g 1.1 times as long as wide, 13 bracts, capsule bottom flat; width of g equal to the largest diameter of t . Antenna glabrous.

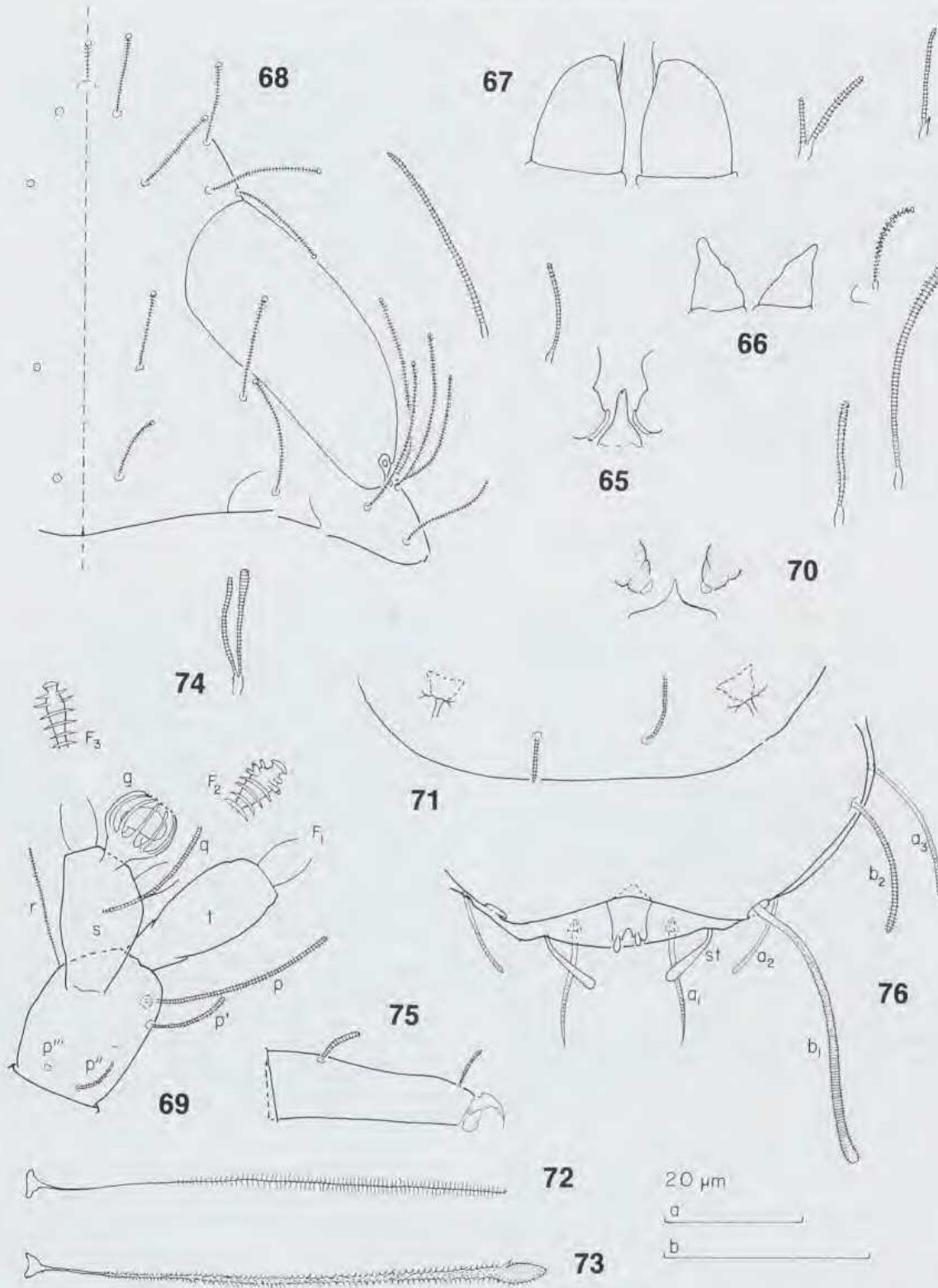
Trunk. Setae of collum segment simple or with extremely short secondary branches; they are subcylindrical, annulate, blunt; lateral setae 1.8 times as long as submedian ones; sternite process short, pointed, glabrous; appendages tripar-

tite, conical, cuticle sparsely pubescent. Setae on tergites like on head. There are 4 + 4 setae on tergite I, 6 + 6 on II-IV, 6 + 4 on V, 4 + 2 on VI. Submedian posterior setae on tergite VI 0.4-0.6 of their distance apart and 0.6-0.9 of the pygidial setae a_j . Relative lengths of trichobothria : $T1 = 100, T2 = 103, T3 = 92, T4 = 114, T5 = 150$. All have thin axes, those of $T5$ and particularly $T3$ thicker, the latter with a broadly lanceolate endswelling; pubescence of straight simple hairs, mostly short and oblique but erect on distal half of $T1, T2$ and $T4$; stronger pubescence on axes of $T3$. Cuticle of tergites glabrous.

Legs. Setae on coxa and trochanter of leg 9 subequal, furcate, blunt, striate; branches subequal. More anteriorly these setae are simple. Tarsus of leg 9 tapering, 3 times as long as its largest diameter, cuticle minutely granular; setae subequal in length, subcylindrical, densely striate, blunt; they reach 0.2 of the length of tarsus.

Pygidium. Tergum. Posterior margin rounded with small bulges outside setae st . Relative lengths of setae : $a_1 = 100, a_2 = 78, a_3 = 122, st = 61$. The a_1 tapering pointed, a_2 and a_3 cylindrical, st clavate; a_1 straight, distal half curved inwards; a_2, a_3 and st curved inwards, a_2 and st converging, a_3 diverging; st glabrous, the others faintly striate in distal part. Distance $a_1 - a_2$ 0.8 of the length of a_1 , distance $a_1 - a_3$ 0.6 of distance $a_2 - a_3$; distance $st - st$ 2.3 times as long as st and 1.7 times as long as distance $a_1 - a_2$. Cuticle glabrous.

Sternum. Posterior margin with a broadly V-shaped indentation between b_j . Relative lengths of setae ($a_1 = 100$) : $b_1 = 296, b_2 = 122, b_j$ cylindrical, distally a little widened, densely



Figs 65-76. — 65-67 : *Allopauropus (D.) mortensenii* (Hansen). 65 : collum segment, median and right part, sternal view ; 66 : penes and coxal seta of the 2nd pair of legs, subad. 8 ; 67 : penes and setae of coxa and trochanter of the 2nd pair of legs, ad. 9. 68-76 : *Allopauropus (D.) sessilis* n. sp., holotype ad. 9. 68 : head, right side, tergal view ; 69 : right antenna, sternal view ; 70 : collum segment, median and left part, sternal view ; 71 : tergite VI, posterior part ; 72 : 71 ; 73 : 73 ; 74 : seta of trochanter of the 9th pair of legs ; 75 : tarsus of the 9th pair of legs ; 76 : pygidium, median and left part, sternal view. Scale : a : 66, 71, 72, 73, 75 ; b : 65, 67, 68, 69, 70, 74, 76.

striate; b_2 cylindrical, blunt, densely striate. b_1 1.4 times as long as their distance apart, b_2 as long as distance b_1-b_2 . Anal plate broader at base, lateral margins concave, posteriorly two short blunt lobes separated by a U-shaped notch; each lobe with a short, sternal, posteriorly directed, clavate appendage; plate and appendages glabrous.

Discussion : *A. sessilis* belongs to the same group of species as *A. cognatus* Remy from USA, *delphini* Remy from Madagascar, *lobiger* Remy from Madagascar, Mauritius, Réunion and Sri Lanka but also from southern USA, and *pauliani* Rémy from Ivory Coast. It is closest to *A. cognatus* (REMY, 1956d : 17-19, fig. 6), but distinct from the latter especially by the following characters : trichobothria *T3* have thick axis and apical swelling (not thin axis without apical swelling); submedian posterior setae on tergite VI 0.4-0.6 of their distance apart (not

0.8-0.9); posterior margin of the pygidial tergum evenly rounded between the *st* (not with a distinct median lobe); and *st* distinctly clavate (only a little). With *A. delphini*, *lobiger* and *pauliani* the affinities are less obvious. It is distinguished from them by characters of the anal plate, the *st*, the *T3*, the *g* and the posterior margin of the pygidial tergum.

Derivatio nominis : from Latin *sessilis* = broad in base (anal plate).

Type locality : Plateau de Dogny, 902 m.

Type material : holotype ♀ adult 9, *st* 302, Plateau de Dogny, rainforest, 920 m, 165°52'26" E, 21°37'16" S, 9.I.1987 (A. & S. TILLIER) (MNHN).

Allopauropus (D.) silvaticus n. sp.

(figs 77-86)

Description : length (0.37-) 0.51 (-0.52) mm. Head. Tergal setae short, thin, straight or a little curved, subcylindrical-very little clavate, densely striate, blunt; relative lengths, 1st row : $a_1 = 10$, $a_2 = (13-)$ 16; 2nd row : $a_1 = ?$ (-13), $a_2 = (21-)$ 24, $a_3 = (14-)$ 16; 3rd row : $a_1 = 12$ (-14), $a_2 = (18-)$ 20; 4th row : $a_1 = (13-)$ 14, $a_2 = 22$ (-28), $a_3 = (14-)$ 16, $a_4 = (25-)$ 30; lateral group : $l_1 = (30-)$ 36, $l_2 = (21-)$ 24, $l_3 = 26$ (-27). The ratio a_j/a_{j-1} is : 1st row 0.6, 2nd row 0.5 (only paratypes), 3rd row (0.5-) 0.7, 4th row (0.7-) 0.8. Temporal organs 1.1 - 1.3 times as long as their shortest distance apart; no pistil. Head cuticle glabrous.

Antennae. Segment 4 with 4 subcylindrical, densely striate, blunt setae; relative lengths : $p = 100$, $p' = (46-)$ 52, $p'' = (33-)$ 35, $r = (50-)$ 61. Tergal seta p (1.6-) 1.8 times as long as tergal branch t . The latter short, 1.3 (-1.4) times as long as wide and (0.8-) 1.0 of the length of sternal branch s which is 1.1 (-1.4) times as long as wide. Anterodistal corner of s only slightly truncate. Seta q like setae of segment 4 and about as long as s . Relative lengths of flagella (base segments included) and base segments (only paratypes) : $F1 = 100$, $bs_1 = 12$; $F2 = 31-38$, $bs_2 = 4-5$; $F3 = 76-82$, $bs_3 = 7-10$. $F1$ 6.0 times as long as t , $F2$ and $F3$ (1.8-) 2.1 and (3.9-) 4.8 times as long as s respectively; distal calyces subhemispherical; distal part of flagellum axes evenly widening towards the basal part of calyces; bs_2 distinctly smaller than bs_1 and bs_3 . Globulus g (1.1-) 1.2 times as long as wide, 10 bracts, capsule subspherical; g is as wide as (— 1.1 times as wide as) the largest diameter of t . Antenna glabrous.

Trunk. Setae of collum segment simple, cylindrical, densely striate, blunt; lateral ones 2.3 (-2.4) times as long as submedian ones; sternite process narrow, blunt, glabrous; appendages bipartite, glabrous. Setae on tergites very little clavate, striate. There are 4 + 4 setae on tergite I, 6 + 6 on II-IV, 6 + 4 on V, 4 + 2 on VI. Submedian posterior setae on tergite VI bent outwards, (0.5-) 0.6 of their distance apart and (0.6-) 0.8 of pygidial setae a_j . Relative lengths of trichobothria : $T1 = 100$, $T2 = (104-)$ 120, $T3 = (86-)$ 117, $T4 = (106-)$ 137, $T5 = (116-)$ 140-145. All have thin axes, those of $T3$ and $T5$ somewhat thicker than the others; the former with an ovoid endswelling. Pubescence of all the trichobothria consisting of short simple oblique hairs on

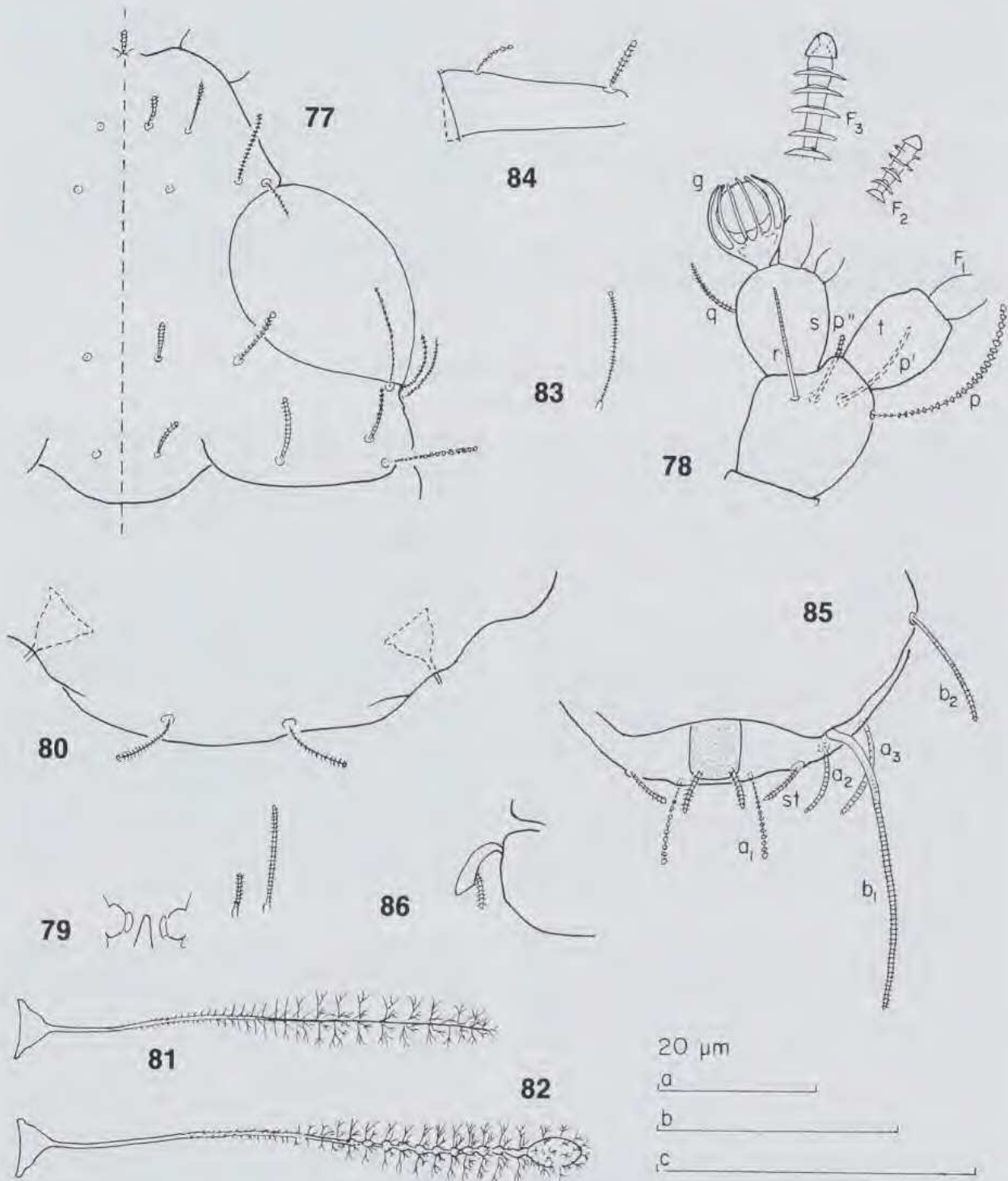
distal half but erect long branched hairs arranged in whorls on distal half. Cuticle of tergites glabrous.

Legs. Setae on coxa and trochanter of legs 1-9 all simple, cylindrical, striate, blunt. Tarsus of leg 9 tapering, (2.5-) 2.7 (-2.9) times as long as its largest width; cuticle glabrous; setae subcylindrical, annulate, blunt; proximal seta 0.2 (-0.3) of the length of tarsus and (0.8-) 0.9 of the length of distal one.

Pygidium. Tergum. Posterior margin with a broad and low bulge below setae a_j . Relative lengths of setae : $a_1 = 100$, $a_2 = (82-)$ 100, $a_3 = (112-)$ 121 (-157), $st = 57$ (-72). These setae are subcylindrical, annulate, blunt; a_1 almost straight diverging; a_2 , a_3 and st curved inwards and converging. Distance a_1-a_2 a little shorter (— a little longer) than a_1 , distance a_1-a_3 1.6 (-2.1) times as long as distance a_2-a_3 ; distance $st-st$ (2.5-) 3.5 times as long as st and (1.7-) 2.3 times as long as distance a_1-a_2 . Cuticle glabrous.

Sternum. Posterior margin between b_1 with a broadly rounded indentation. Relative lengths of setae ($a_j = 100$) : $b_1 = (318-)$ 371 (-400), $b_2 = (114-)$ 143 (-147). b_1 tapering densely striate; b_2 subcylindrical, densely striate, blunt. b_1 1.4 times as long as their distance apart, b_2 0.9 of distance b_1-b_2 . Anal plate (1.1-) 1.2 times as long as broad with almost straight margins, posterior corners rounded; it has two posterolateral appendages projecting from sternal side, they reach (0.8-) 0.9 of the length of plate and are somewhat curved inwards, cylindrical, striate, blunt; plate surface faintly granular.

Discussion : this species is closest to my own *A. (D.) perturbatus* (1970 : 47-48, fig. 21) collected only from Sri Lanka, but is easily distinguished from the latter by its short-stalked antennal globulus (not distinctly stalked); the proportionally shorter antennal seta g (about as long as globulus, not 1.6 times as long as that organ); the simple seta on the trochanter of leg 9 (not furcate); the higher ratio of the length of the



Figs 77-86. — *Allopauropus (D.) silvaticus* n. sp., holotype ad. ♀. 77 : head, median and right side, tergal view ; 78 : right antenna, posterior view ; 79 : collum segment, median and left part, sternal view ; 80 : tergite VI, posterior part ; 81 : T1 ; 82 : T3 ; 83 : seta of trochanter of the 9th pair of legs ; 84 : tarsus of the 9th pair of legs ; 85 : pygidium, median and left part, sternal view ; 86 : anal plate, lateral view. Scale : a : 79 ; b : 77, 80, 81, 82, 83, 84, 85, 86 ; c : 78.

pygidial setae a_1 / length of the anal plate (1.2-1.7, not 0.8) and by the shape of the appendages of the anal plate (cylindrical, not clavate). Although to a lesser degree, there are also connections with *A. adfinis* REMY & ROLLET from Madagascar.

Derivatio nominis : from Latin *silva* = wood.

Type locality : Mt. Ningua, 1000 m.

Type material : holotype ♀ adult 9, st 288, Mt. Ningua, rainforest upon ultramaffic rocks,

1000 m, 166°09'03" E, 21°44'24" S, 28.x.1986 (A. & S. TILLIER) (MNHN). Paratypes : 1 ♀ adult 9, same data as the holotype ; 2 ♀♀ adult 9, 1 juv. 6, st 318, Dent de Saint-Vincent, south ridge, rainforest, 1170 m, 166°12'59" E, 21°52'03" S, 5.viii.1987 (A. & S. TILLIER, L. BONNET DE LARBOGNE et Y. LETOCART) ; 1 ♀ adult 9, 1 ♀ subadult 8, st 214a, To Ndeu valley, north slope, rainforest upon ultramaffic rocks, 120 m, 166°17'14" E, 21°42'24" S, 29.x.1986 (A. & S. TILLIER) ; 1 ♀ adult, st 113a, Mt. Table Unio, rainforest, 500 m, 165°45'06" E, 21°34'44" S, 31.x.1986 (A. & S. TILLIER) (MNHN).

Allopauropus (D.) unioensis n. sp.

(figs 87-96)

Description : length 0.37 mm. Head. Partly not available for study. Tergal setae seem to be of medium length, cylindrical, densely annulate, blunt ; relative lengths, 1st row : $a_1 = 10$, $a_2 = ?$; 2nd row : $a_1 \approx 10$, $a_2 = 10$, $a_3 = 30$; 3rd row : $a_1 = ?$, $a_2 = 14$; 4th row a_1 , a_2 , and $a_3 = ?$, $a_4 = 11$; lateral group $l_1 = l_2 = 18$, $l_3 = 24$. The ratio a_1/a_2-a_3 is : 1st row 0.4, 2nd row 0.6. Temporal organs 1.1 times as long as their shortest distance apart ; no pistil. Head cuticle glabrous.

Antennae. Segment 4 with 4 blunt setae ; p , p' and p'' subcylindrical annulate, r cylindrical, very thin, striate ; relative lengths : $p = 100$, $p' = 44$, $p'' = 34$, $r = 56$. Tergal seta p 1.8 times as long as tergal branch t . The latter 1.4 times longer than wide and 0.8 of the length of sternal branch s , which is 1.5 times as long as wide. Anterodistal corner of s distinctly truncate. Seta q like setae on anterior part of segment 4, 1.2 times as long as s . Relative lengths of flagella (base segments included) and base segments : $F1 = 100$, $bs_1 = 10$; $F2 = 35$, $bs_2 = 8$; $F3 = 97$, $bs_3 = 13$. $F1$ 4.2 times as long as t , $F2$ and $F3$ 1.2 and 3.4 times as long as s respectively ; distal calyces low ; distal part of flagellum axes with distinct swelling in $F1$ and $F3$, only a little widened in $F2$; bs_2 smaller than bs_1 and bs_3 . Globulus g 1.1 times as long as wide, ≈ 9 bracts, capsule subspherical ; width of g 0.8 of the largest diameter of t . Antenna glabrous.

Trunk. Setae of collum segment simple with rudimentary glabrous secondary branches ; they are subcylindrical, distally thickest, annulate, with hemispherical distal calyces ; lateral setae 2.8 times as long as submedian ones ; sternite process broadly triangular, anteriorly blunt ; appendages bipartite, glabrous. Setae on tergites cylindrical, annulate, blunt. There are 4 + 4 setae on tergite I, 6 + 6 on II-IV, 6 + 24 on V, 4 + 2 on VI. Submedian posterior setae on tergite VI cylindrical, annulate, blunt, diverging, 0.5 of their distance apart and as long as pygidial setae a_1 . Relative lengths of trichobothria : $T1 = T2 = 100$, $T3 = 93$, $T4 = 89$, $T5 = 109$. All have thin axes, those of $T3$ somewhat thicker than the others and with a proportionally large ovoid endswelling. Pubescence of all trichobothria consisting of short simple hairs on proximal half but erect longer and branched hairs arranged in whorls on distal half ; hairs on $T3$ thicker than on other trichobothria, branched hairs on the endswelling are short. Cuticle of tergites glabrous.

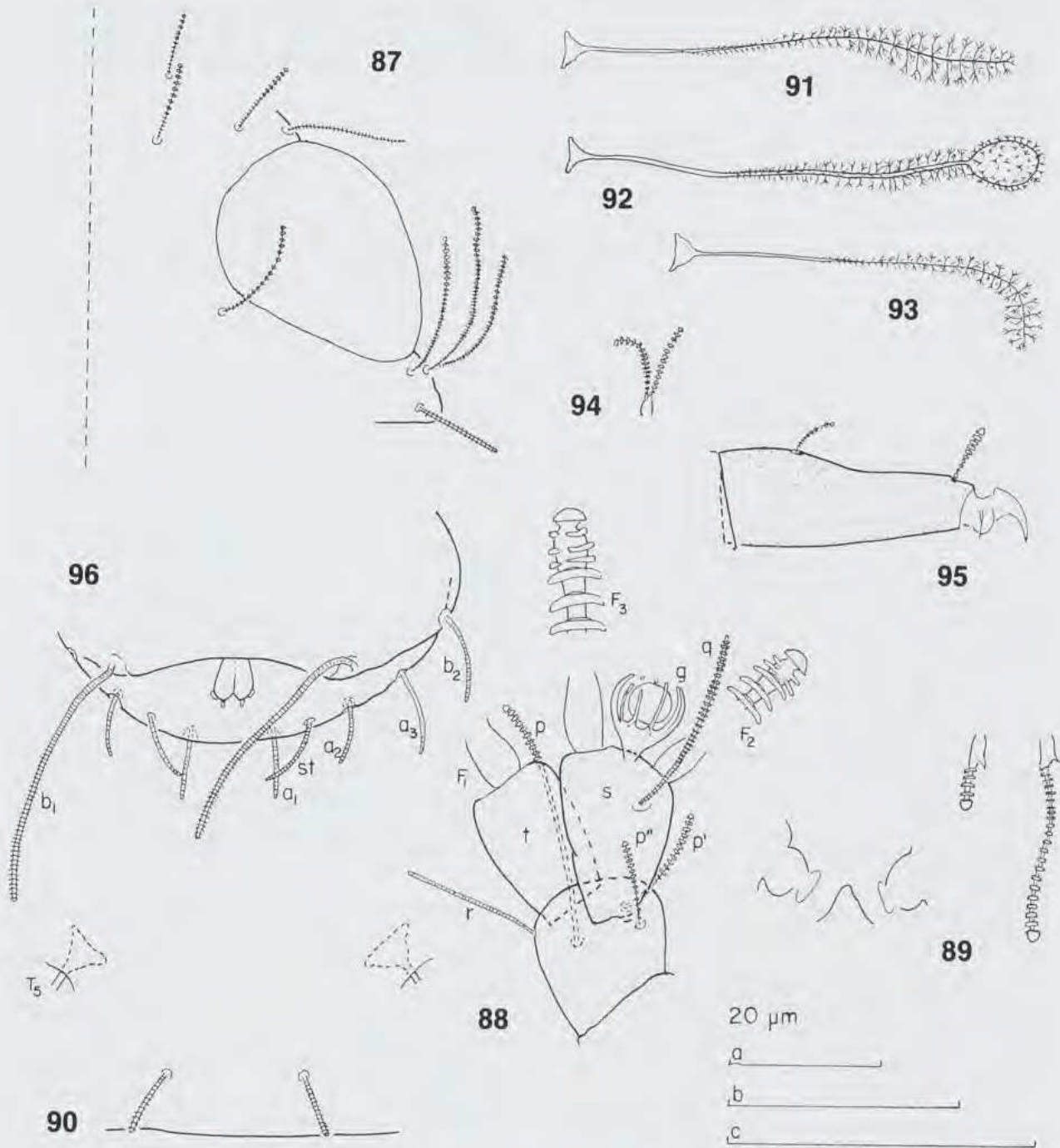
Legs. Setae on coxa and trochanter of leg 9 subequal, furcate, cylindrical, blunt, annulate ; branches subequal.

More anteriorly these setae are simple or with an exceedingly small secondary branch ; they are all cylindrical, blunt, annulate. Tarsus of leg 9 tapering, 2.6 times as long as its largest width ; cuticle very faintly granular ; setae annulate blunt, proximal one subcylindrical, distal one somewhat clavate ; proximal seta 0.2 of the length of tarsus and 0.9 of the length of distal one.

Pygidium. Tergum. Posterior margin evenly rounded. Relative lengths of setae : $a_1 = 100 \approx a_2$, $a_3 = 125$, $st = 86-100$. a_1 are cylindrical, straight, blunt, a_2 , a_3 and st subcylindrical, tapering, curved inwards, a_3 diverging, st converging. Distance a_1-a_2 1.2 times as long as a_1 , distance a_1-a_3 1.4 times as long as distance a_2-a_3 ; distance $st-st$ 2.0-2.3 times as long as st and twice as long as distance a_1-a_2 . Cuticle glabrous.

Sternum. Posterior margin between b_1 with a broadly rounded indentation. Relative lengths of setae ($a_1 = 100$) : $b_1 = 383$, $b_2 \approx 130$. These setae cylindrical, densely annulate, blunt. The former are 1.1 times as long as their distance apart, the latter about as long as distance b_1-b_2 . Anal plate trapezoid, 1.7 times as long as broad, narrowest anteriorly, with straight lateral margins and two posterior lobes separated by a V-shaped incision ; each lobe with two glabrous appendages : one posterior, short, straight, cylindrical, blunt ; the other posterolateral, flattened, knoblike.

Discussion : *A. unioensis* is close to *A. silvaticus* described above but is easily distinguished from the latter by the shape of the anal plate (trapezoid with posterior incision and 4 very short appendages, not subquadrate with two long posterior appendages) ; by the longer antennal seta q (1.2 times as long as s , not as long as s) ; and much longer head setae ; moreover, the setae on the coxa and trochanter of the last pair of legs are furcate (not simple). The species is also somewhat alike *A. mandingus* REMY (1948a : 126-128, fig. 8) from Ivory Coast and *A. angadus* REMY (1952a : 155-156, fig. 5) from Morocco and the Canary Islands but is distinguished from



Figs 87-96. — *Allopauopus (D.) unioensis* n. sp., holotype ad. ♀. 87 : head, right side, tergal view (partly hidden) ; 88 : left antenna, sternal view ; 89 : collum segment, median and left part, sternal view ; 90 : tergite VI, posterior part ; 91 : T1 ; 92 : T3 ; 93 : T5 ; 94 : seta of coxa of the 9th pair of legs ; 95 : tarsus of the 9th pair of legs ; 96 : pygidium, median and left part, sternal view. Scale : a : 91, 92, 93 ; b : 87, 90, 94, 95, 96 ; c : 88, 89.

them by reliable diagnostic characters, e. g. the shape of the anal plate and the *T3* and the setae on the pygidial tergum.

Derivatio nominis : a latinization of (Mt. Table) Unio.

Type locality : Mt. Table Unio, 500 m.

Type material : holotype ♀ adult 9, st 113a, Mt. Table Unio, rainforest, 500 m, 165°45'06" E, 21°34'44" S, 31.x.1986 (A. & S. TILLIER) (MNHN).

Genus *PAUROPUS* Lubbock¹

Pauropus montanus n. sp.

(figs 97-104)

Description : length 1.05 mm. Head. Tergal setae fairly long, shortly pubescent, anterior and median ones clavate, sublateral and lateral ones cylindrical blunt. Relative lengths of setae, 1st row : $a_1 = 10$, $a_2 = 11$; 2nd row : $a_1 = a_3 = 13$, $a_2 = 14$; 3rd row : $a_1 = 11$, $a_2 = 10$; 4th row : $a_1 = 13$, $a_2 = 28$, $a_3 = 19$, $a_4 = 10$. The ratio $a_1 / a_1 - a_1$ is : 1st row 1.5, 2nd row 0.7, 3rd row 0.8, 4th row 1.7. Lateral setae not studied. Temporal organs about as long as their shortest distance apart; small posterior pistil. Head cuticle glabrous.

Antennae. Segment 4 with 5 setae; p , p' and p'' cylindrical, annulate, insignificantly pointed; u cylindrical blunt; r tapering, pointed, very shortly pubescent; relative lengths : $p = 100$, $p' = 86$, $p'' = 29$, p''' rudimentary, $r = 25$, $u = 5$. Tergal seta p 1.1 times as long as tergal branch t . The latter very slender, 6 times as long as wide and 1.3 times as long as sternal branch s which is 2.9 times as long as its largest width. Anterodistal corner of s only a little more truncate than posterodistal one. Seta q like anterior setae on segment 4, 0.9 of the length of s . Relative lengths of flagella (base segments included) and base segments : $F1 = 100$, $bs_1 = 7$; $F2 = 71$, $bs_2 = 6$; $F3 = 84$, $bs_3 = 7$. $F1$ 2.8 times as long as t , $F2$ and $F3$ 2.5 and 2.9 times as long as s respectively; distal calyces subconical, those of $F2$ and $F3$ a little smaller than those of $F1$; distal part of flagellum axes not widened; bs_2 and bs_3 similar. Globulus g 1.3 times as long as wide, 8 or 9 bracts, capsule flattened; width of g 0.9 of the largest diameter of t . Antenna glabrous.

Trunk. Setae of collum segment furcate; main branch leaf-shaped, densely pubescent; secondary branch very small, cylindrical, glabrous. Lateral setae 1.5 times as long as submedian ones; sternite process broad and blunt with short but dense pubescence; appendages bipartite, basal segment densely pubescent. Setae on anterior tergites clavate, on most posterior ones subcylindrical. There are 4 + 4 setae on tergite I, 6 + 6 on II-V, 4 + 2 on VI. Submedian posterior setae on tergite VI straight, subcylindrical, tapering, glabrous; they reach 0.8 of their distance apart and are 2.4 times as long as pygidial setae a_1 . Relative lengths of trichobothria : $T1 = 100$, $T2 = 108$, $T3 = 120$, $T4 = 159$, $T5 = 229$. All have thin axes and short, straight, oblique pubescence hairs. Cuticle of tergites glabrous.

Legs. Setae on coxa and trochanter of leg 9 leaf-shaped, 6 times as long as broad; secondary branch thinner, clavate, 0.7-0.8 of the length of main branch; both branches with short, dense, oblique pubescence. More anteriorly these setae are more broadly leaf-shaped and with very short, cylindrical,

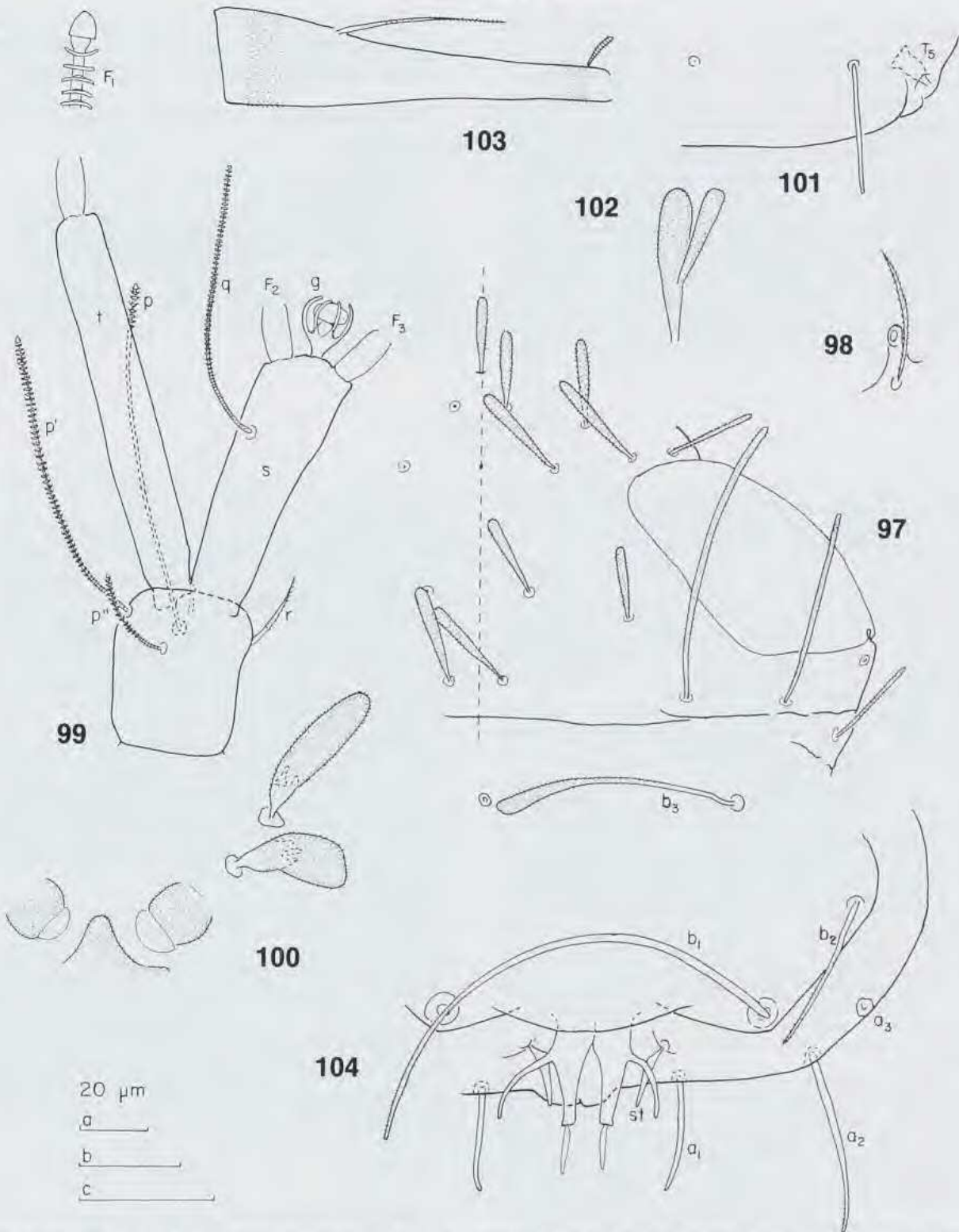
glabrous secondary branches. Tarsus of leg 9 very slender distally; it is 4.3 times as long as its largest width; cuticle with very delicate pubescence; proximal seta tapering, pointed, with short oblique pubescence and distal one somewhat clavate, densely striate; proximal seta 0.4 of the length of tarsus and 4.5 times as long as distal seta.

Pygidium. Tergum. Posterior margin between st with a low median bulge having a shallow incision. Relative lengths of setae : $a_1 = 100$, $a_2 = 175$, $a_3 = ?$ (lacking), $st = 62$. a_1 and a_2 are subcylindrical and curved inwards, a_1 straight and glabrous, a_2 diverging and distally granular; st straight, knife-shaped, converging, glabrous. Distance $a_1 - a_1$ 1.8 times as long as a_1 , distance $a_1 - a_2$ twice as long as distance $a_2 - a_3$; distance $st - st$ twice as long as st and 0.7 of distance $a_1 - a_1$. Cuticle glabrous.

Sternum. Posterior margin between b_1 indented but with a low median rounded bulge. Relative lengths of setae ($a_1 = 100$) : $b_1 \approx 500$, $b_2 = 116$, $b_3 \approx 140$. b_1 cylindrical blunt; b_2 tapering, converging, distally granular; b_3 clavate shortly pubescent. b_1 at least 2.1 times as long as their distance apart; b_2 1.1 times as long as distance $b_1 - b_2$; b_3 almost as long as their distance apart. Anal plate broadest anteriorly, two lateral and two submedian branches; the former cylindrical, blunt, diverging, curved inwards, about as long as submedian branches, the latter separated by a V-shaped incision, straight, tapering, distally cut transversely, on outer side with short pubescence; submedian branches with distal, straight, fusiform, glabrous appendages the length of which is about 0.4 of the length of plate. Cuticle glabrous.

Discussion : *P. montanus* should be grouped together with *P. spectabilis* Hansen (1902 : 363-365, pl. II, fig. 4a-h) from Chile, *wieheorum* Remy (1959 : 149-151, fig. 1) from Mauritius and *aculeatus* described below. It is distinguished from them by several diagnostic characters, e. g. the length ratio of the antennal setae p and p' (subequal in *wieheorum*, $p > p'$ in *spectabilis*, *montanus* and *aculeatus*); the length of the posterior submedian setae of tergite VI (0.7-0.8 of their distance apart in *montanus*, *aculeatus* and

1. In 1974 I described a new *Pauropus* species from the subantarctic Crozet Islands as *Pauropus australis* (SCHELLER, 1974 : 59-62, fig. 1). This a junior homonym of *Pauropus australis* Harrison, 1914 (620-622, pl. 71, figs 12-14). Consequently the Crozet Island species is here renamed *Pauropus daviesi* nom. nov. in honour of the collector Dr. Lewis Davies, Durham, England.



Figs 97-104. — *Pauropus montanus* n. sp., holotype, ad. ♀. 97 : head, median and right side, tergal view ; 98 : pistil and lateral seta l_1 ; 99 : right antenna, sternal view ; 100 : collum segment, median and left part, sternal view ; 101 : tergite VI, posterior part, median and right part ; 102 : seta of coxa of the 9th pair of legs ; 103 : tarsus of the 9th pair of legs (pubescence only partly drawn) ; 104 : pygidium, median and left part, sternal view . Scale : a : 101, 103 ; b : 97, 98, 100, 102 ; c : 99, 104.

wieheorum, about 1.8 times as long as that distance in *spectabilis*); the pubescence of the tarsi of the last pair of legs (insignificant in *montanus* and *aculeatus*, distinct in *wieheorum*); the shape of the posterior margin of the pygidial tergum (bulge with median incision in *montanus*, *aculeatus* and *wieheorum*, evenly rounded in *spectabilis*); the shape of the pygidial setae a_1 (subcylindrical almost glabrous in *montanus* and *aculeatus*, tapering pointed in *spectabilis*, thick lanceolate with distinct pubescence in *wieheorum*); the b_1 (cylindrical in *montanus*, tapering in *aculeatus*, clavate in *wieheorum*); the b_3 (clavate in *montanus*, subcylindrical tapering in *aculea-*

tus); and the shape of the anal plate (submedian branches distally cut square in *montanus* and *aculeatus*, not in *wieheorum* and *spectabilis*).

Derivatio nominis : from Latin *mons* = mount (type locality).

Type locality : Mt. Djiaouma, 1050 m.

Type material : holotype ♀ adult 9, st 103a, Mt. Djiaouma, rainforest with *Araucaria* upon ultramaffic rocks, 1050 m, 165°21'35" E, 21°26'41" S, 2.IV.1987 (A. & S. TILLIER) (MNHN). Paratypes : 1 ♀ adult 9, 1 juv. 3, same data as the holotype (MNHN).

Pauropus aculeatus n. sp.

(figs 105-111)

Description : length 0.85 (-1.22) mm. Head. Tergal setae fairly long, very shortly pubescent, anterior and median ones somewhat clavate; sublateral ones cylindrical; lateral ones tapering pointed. Relative lengths of setae. 1st row : $a_1 = 10$, $a_2 = 11$ (-12); 2nd row : $a_1 = 9$ (-11), $a_2 = 10$ (-14), $a_3 = (12-)$ 13; 3rd row : $a_1 \approx 7$ (-10), $a_2 = 8$ (-10); 4th row : $a_1 = 8$ (-11), $a_2 = (21-)$ 22, $a_3 = 16$ (-22), $a_4 = 13$ (-14). The ratio $a_j / a_1 - a_j$ is : 1st row 1.1 (-1.4), 2nd row 0.5 (-0.6), 3rd row ≈ 1 (-1.1), 4th row 1.1 (-1.4). Relative lengths of lateral setae ($a_1 = 10$) : $l_1 = 12$, $l_2 = 6$, $l_3 = ?$. Length of temporal organs 0.8 of their shortest distance apart; small posterior pistil. Head cuticle minutely granular.

Antennae. Segment 4 with 5 setae p , p' , p'' , r and u ; all but r subcylindrical, tapering, on proximal half short oblique pubescence, distally densely striate; r tapering, pointed, glabrous. Relative lengths of setae : $p = 100$, $p' = (86-)$ 94, $p'' = 24$ (-33), p''' rudimentary, r (23-) 26-29 (-30), $u = 3$ (-5). Tergal seta p about as long as tergal branch t . The latter very slender, (6.4-) 6.8 (-7.1) times as long as wide and (1.3-) 1.5 times as long as sternal branch s , which is 3.2 (-4.2) times as long as wide. Anterodistal corner of s more truncate than posterodistal one. Seta q cylindrical similar to anterior setae of segment 4; it is (0.7-) 0.8 of the length of s . Relative lengths of flagella (base segments included) and base segments : $F1 = 100$, $bs_1 = 7$ (-8); $F2 = ?$ (-75), $bs_2 = ?$ (-6); $F3 = 81$ (-83), $bs_3 = 7$ (-8). $F1$ 2.2 (-2.3) times as long as t , $F2$ and $F3$ (2.4-2.5) and (2.7-2.9) times as long as s respectively; distal calyces subhemispherical, distal part of flagella axes not thickened. Globulus g 1.2 (-1.3) times as long as wide, (7-) 8 (-9) bracts, capsule flattened; width of g about equal to the largest diameter of t . Antenna glabrous.

Trunk. Submedian setae of collum segment furcate, main branch lanceolate, densely pubescent; secondary branch very short, cylindrical, glabrous; lateral setae not studied; anterior part of sternite process with subparallel sides, blunt; appendages bipartite, granular. Setae on tergites increasing in length posteriorly, those on I and II subcylindrical blunt, on III cylindrical, on IV-VI tapering. 4 + 4 setae on I, 6 + 6 on II-V, 4 + 2 on VI. Submedian posterior setae on VI straight, subcylindrical, tapering, glabrous; they are as long as (-1.2 times as long as) their distance apart and 1.9 (-2.6) times as long as pygidial setae a_1 . Relative lengths of trichobothria : $T1 = 100$, $T2 = 109$ (-129), $T3 = (128-)$ 130, $T4 = (166-)$ 175 (-177), $T5 = (219-)$ 224. All have thin axes, proximal part glabrous, middle and distal parts with very

short, straight, mainly oblique pubescence hairs. Cuticle of tergites glabrous.

Legs. Setae on coxa and trochanter of leg 9 are furcate; main branch 8 (-9) times as long as broad; secondary branch 0.6 (-0.8) of the length of main branch, distally widened; both branches with short dense pubescence. More anteriorly these setae are more broadly leaf-shaped with very short, cylindrical, glabrous secondary branches. Tarsus of leg 9 (4.7-) 5.1 times as long as its largest width; cuticle minutely granular; proximal seta tapering, pointed, distally very shortly pubescent; distal seta subcylindrical, blunt, shortly pubescent; proximal seta 0.4 (-0.6) of the length of tarsus and 3.2 (-4.0) times as long as distal seta.

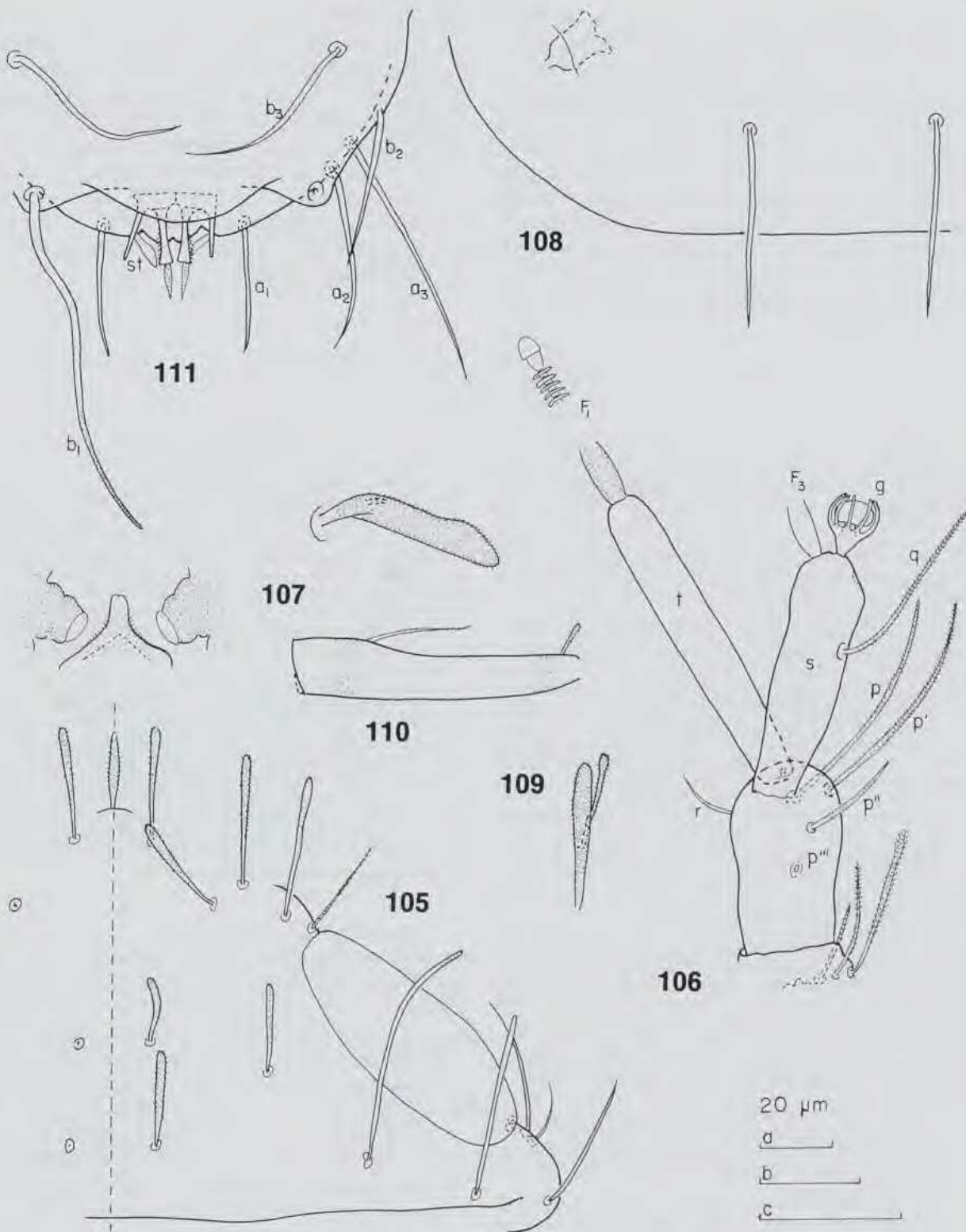
Pygidium. Tergum. Posterior margin between st with a rounded bulge having a median incision. Relative lengths of setae : $a_1 = 100$, $a_2 = (121-)$ 145 (-186), $a_3 = (147-)$ 185 (-200), $st = (47-)$ 60 (-76). All setae glabrous; a_1 , a_2 and a_3 tapering, a_1 and a_2 almost straight, a_2 curved inwards, a_3 diverging; st converging, outer margin straight, inner one convex. Distance $a_1 - a_1$ 1.1 (-1.8) times as long as a_1 , distance $a_1 - a_2$ (2-) 4 times as long as distance $a_1 - a_1$, distance $st - st$ 1.6 (-2.0) times as long as st and (0.7-) 0.9 of distance $a_1 - a_1$. Cuticle glabrous.

Sternum. Posterior margin between b_1 indented but with a large median rounded bulge. Relative lengths of setae ($a_1 = 100$) : $b_1 = 270$ (-480), $b_2 = 115$ (-150), $b_3 = 135$ (-253). They are tapering, pointed, all but distal part of b_1 glabrous; b_2 and b_3 converging, b_1 1.2 (-1.5) times as long as their distance apart; b_2 at least as long as distance $b_1 - b_2$, b_3 (0.6-) 0.7 (-0.8) of distance $b_3 - b_3$. Anal plate similar to that in *P. montanus* described above but the submedian appendages are widest distally (not tapering), the cleft between them is U-shaped at bottom (not V-shaped), the distal appendages are broadest at base, tapering, pointed (not fusiform) and in some specimens the outer sides of the submedian branches are pubescent (not glabrous).

Discussion : see above under *P. montanus*.

Derivatio nominis : from Latin *aculeus* = spine (on distal submedian appendages of the anal plate).

Type locality : Rivière Bleue, 170 m.



Figs 105-111. — *Pauropus aculeatus* n. sp., holotype ad. ♀. 105 : head, median and right side, tergal view ; 106 : left antenna, sternal view ; 107 : collum segment, median and left part (lateral seta omitted), sternal view ; 108 : tergite VI, median and right part ; 109 : seta of coxa of the 9th pair of legs ; 110 : tarsus of 9th pair of legs ; 111 : pygidium, median and left part, sternal view. Scale : a : 110 ; b : 108, 109 ; c : 105, 106, 107, 111.

Type material : holotype ♀ adult 9, st 251g, Rivière Bleue, rainforest on slope upon ultramafic rocks, 170 m, 166°40'01" E, 22°05'59" S, 18.III.1987 (A. & S. TILLIER) (MNHN). Paratypes : 1 ♀ adult 9, 1 ♀ subadult 8, 1 juv. 5, same data as the holotype ; 1 juv. 3, 13.III.1986 and 1 juv. 5, 14.III.1986, same locality as the holotype (J. BOUDINOT) ; 1 juv. 6, Mt. Oungoné, Forêt Nord, 4.III.1986 (J. BOUDINOT) ; 1 juv. 3, Rivière Blanche, scrubs in mining area, 27.III.1986 (J. BOUDINOT) ; 1 ♀ adult 9, st 312, Mt. Do, rainforest with *Araucaria* upon ultramafic rocks,

840 m, 165°59'33" E, 21°45'37" S, 2.IV.1987 (A. & S. TILLIER) ; 1 juv. 3, 13.III.1986 and 1 juv. 5, 14.III.1986, Col d'Amieu, litter in rainforest (J. BOUDINOT) ; 1 juv. 6, 2 juv. 5, Mt. Table Unio, rainforest, 500 m, 165°45'06" E, 21°34'44" S, 31.X.1986 (A. & S. TILLIER) ; 1 ♂ subadult 8, 2 juv. 5, st 29a, Mt. Mé Ori, SE slope, rainforest, 530 m, 165°40'22" E, 21°32'18" S, 7.V.1987 (P. MORDAN, A. & S. TILLIER) ; 1 juv. 5, Nouméa, Centre ORSTOM, leaf litter, 23.II.1986 (J. BOUDINOT) (MNHN).

Pauopus seorsum n. sp.

(figs 112-120)

Description : length 0.81 mm. Head. Tergal setae of medium length ; a_3 of 2nd row and posterolateral ones cylindrical striate, all others clavate annulate ; relative lengths, 1st row : $a_1 = a_2 = 10$; 2nd row : $a_1 = 10, a_2 = 15, a_3 = 18$; 3rd row : $a_1 = ?, a_2 = 13$; 4th row : $a_1 = 14, a_2 = ?, a_3 = 13, a_4 = 11$; lateral group : $l_1 = 28$. The ratio a_1/a_2-a_1 is : 1st row 1.1, 2nd row 0.6, 3rd row ?, 4th row 0.9. Length of temporal organs 1.1 times as long as their shortest distance apart ; small pistil in median part. Head cuticle almost granular.

Antennae. Segment 4 with 5 cylindrical, annulate-striate, blunt setae ; relative lengths : $p = 100, p' = 96, p'' = 31, p'''$ rudimentary, $r = 27, u = 4$. Tergal seta p 0.7 of the length of tergal branch t . The latter proportionally long, 4.5 times as long as wide and 1.5 times as long as sternal branch s which is 2.7 times as long as wide, subcylindrical, posterodistal corner as much truncate as anterodistal one. Seta q similar to p and p' , 0.8 of the length of s . Relative lengths of flagella (base segments included) and base segments : $F1 = 100, bs_1 = 6$; $F2 = 72, bs_2 = 6$; $F3 = 74, bs_3 = 6$. $F1$ 2.7 times as long as t , $F2$ and $F3$ 2.2 and 2.3 times as long as s respectively ; flagella axes distally cylindrical ; distal calyces hemispherical ; bs_2 and bs_3 equal in size and shape. Globulus g 1.5 times as long as wide, 7 or 8 bracts with delicate pubescence, capsule subspherical ; width of g 0.8 of the largest diameter of t . Antenna glabrous.

Trunk. Setae of collum segment with short, cylindrical, glabrous secondary branches ; primary ones clavate densely pubescent ; lateral ones 1.6 times as long as submedian ones ; sternite process blunt, very shortly pubescent ; appendages with granular cuticle. Setae on tergites of medium length, subcylindrical, blunt, annulate. 4 + 4 setae on tergite I, 6 + 6 on II-IV, 6 + 4 on V and 4 + 2 on VI. Submedian posterior setae on tergite VI 0.5 of their distance apart and 1.2 times as long as pygidial setae a_j . Relative lengths of trichobothria : $T1 = 100, T2 \approx 95, T3 = 88, T4 = 104, T5 = 118$. They have simple straight axes, very thin in all except $T3$; in the latter proximal 2/3 thick, fusiform, distal 1/3 with a very thin axis. Pubescence hairs short, straight, simple ; they are oblique on the thicker part of $T3$, for the rest erect. Cuticle of tergites glabrous.

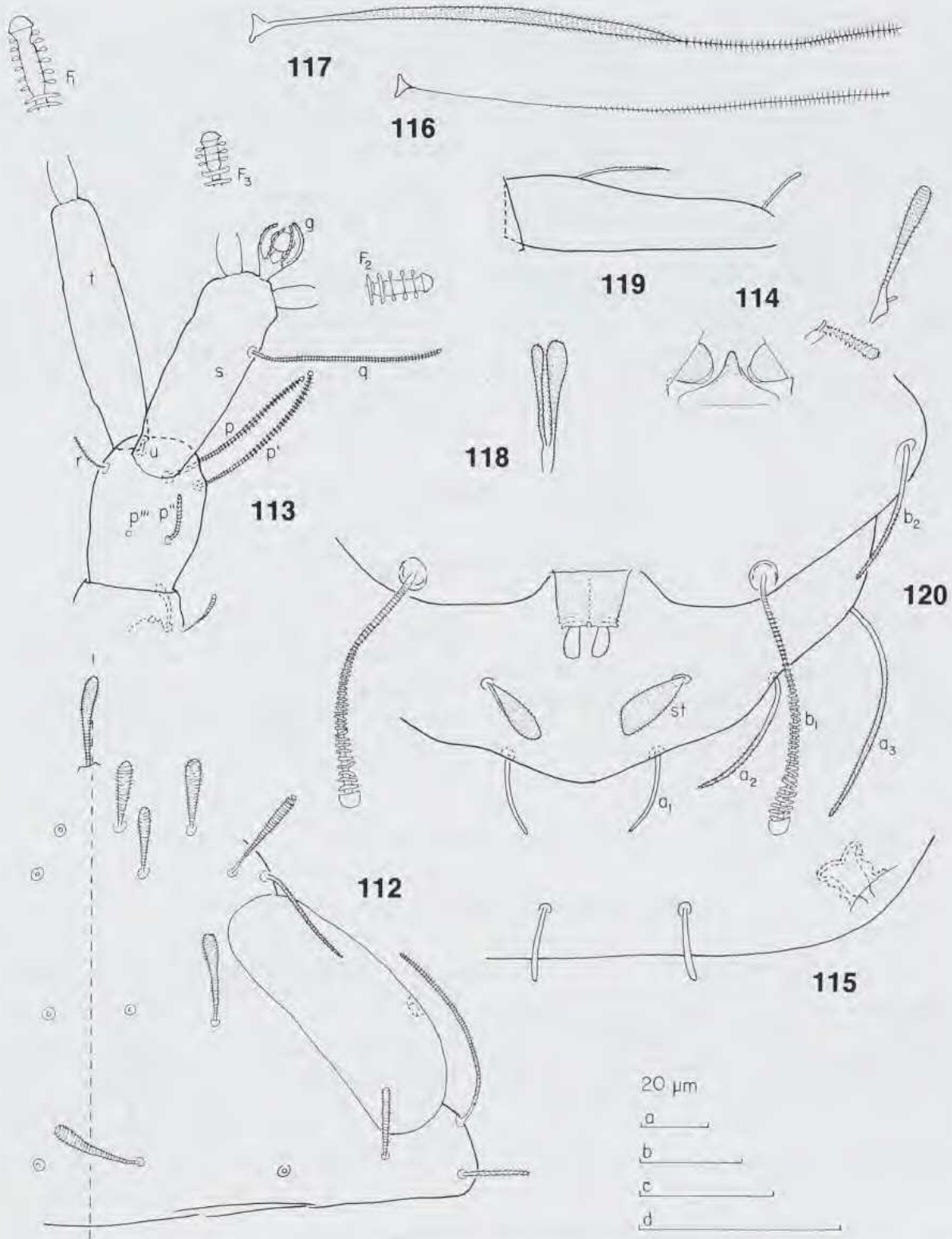
Legs. Setae on coxa and trochanter of leg 9 subequal, with dense pubescence which is very short apically, clavate, primary branch twice thicker than secondary one. More anteriorly the secondary branch is rudimentary, cylindrical, glabrous, blunt. Tarsus of leg 9 3.6 times as long as its largest width. Setae cylindrical, proximal one tapering and pointed, distal one blunt, both with short dense pubescence ;

proximal seta 0.4 of the length of tarsus and 1.8 times as long as distal seta. Cuticle of tarsus glabrous.

Pygidium. Tergum. Posterior margin with 3 low bulges, two posterolateral ones between a_1 and a_2 and one median between a_1 . Relative lengths of setae : $a_1 = 100, a_2 = 155, a_3 = 222, st = 89$. a_1, a_2 and a_3 cylindrical, curved inwards, converging ; st leaf-shaped, apically cut obliquely, straight, converging ; a_1 and a_2 tapering ; a_1 glabrous, a_2 and a_3 with dense, short, oblique pubescence, st with sparse, short, erect pubescence. Distance a_1-a_1 1.7 times as long as a_1 ; distance a_1-a_2 1.3 times as long as distance a_2-a_3 ; distance $st-st$ 2.5 times as long as st and 1.3 times as long as distance a_1-a_1 . Cuticle glabrous.

Sternum. Posterior margin with an indentation only a little broader than the base of anal plate. Relative lengths of setae ($a_1 = 100$) : $b_1 = 278, b_2 = 156$. The b_1 clavate, annulate, annuluses partly oblique, apex large subhemispherical ; b_2 like a_2 of pygidial tergum. b_1 0.7 of their distance apart, b_2 0.7 of distance b_1-b_2 . Anal plate trapezoidal, broadest at base, lateral margins straight but posteriorly creased ; hind margin with distinct lateral corners and bearing two posteriorly directed, short, thick appendages the length of which is 0.5 of plate length ; a small posterior incision between appendages ; plate and appendages minutely granular.

Discussion : in most respects *P. seorsum* is a typical representative of the genus : 1— it has proportionally long and slender antennal branches ; 2— the anterodistal and posterodistal corners of the sternal antennal branch are equally truncated ; 3— the flagella $F2$ and $F3$ are of subequal length ; 4— the antennal globulus g is short-stalked ; 5— the pygidial sternum has setae b_1 and b_2 ; 6— the posterior row of setae on tergite V has 4 setae. However some characters do not fit well in *Pauopus* : 1— the basal part of the trichobothria $T3$ is thickened ; 2— the pygidial setae b_1 are clubshaped and 3— the shape of the anal plate differs. Regarding the latter character there are, however, two species already placed in *Pauopus*, *chevaillieri* and *crassus*,



Figs 112-120. — *Pauropus seorsum* n. sp., holotype ad. ♀. 112 : head, median and right side, tergal view ; 113 : right antenna, sternal view ; 114 : collum segment, median and left part, sternal view ; 115 : tergite VI, posterior part, median and right part ; 116 : T1 ; 117 : T3 ; 118 : seta of coxa of the 9th pair of legs ; 119 : tarsus of the 9th pair of legs ; 120 : pygidium, median and left part, sternal view. Scale : a : 116 ; b : 114, 117, 118, 119 ; c : 112, 113, 115 ; d : 120.

both described by REMY from Madagascar (1956c : 116-121, figs 7-8), which exhibit anal plates which are more similar to those of other genera such as e. g. *Allopauropus*. Some characters in the antennae, the trichobothria, the legs and the pygidium connect the species with REMY's *Allopauropus* (*D.*) *muscicolus* from New Zealand (1956a : 20-22, fig. 4). Distinctive characters are : 1— details in the shape of the anal plate (distinct posterolateral corners in *seorsum*, no at all or rounded in *muscicolus*; appendages almost straight in *seorsum*, not diverging); 2— shape of the styli (leaf-shaped, not cylindrical); 3— length of the pygidial setae b_1 (0.7 of their distance apart, not 1.2 times as long as that distance); 4— proportionally longer pygidial

setae a_3 (2.2 times as long as the a_1 , not 1.4); 5— proportionally more slender antennal branch t (4.5 times as long as wide, not 3); 6— ratio t/p (t 1.5 times as long as p , not 0.8 of p). Since REMY's description is short and not complete there may be other distinctive characters.

Derivatio nominis : from Latin *seorsum* = aside (in the genus).

Type locality : Rivière Blanche.

Type material : holotype ♀ adult 9, Rivière Blanche, macchia, 7.III.1986 (J. BOUDINOT) (MNHN). Paratype : 1 juv. 5, same data as the holotype (MNHN).

Genus *RABAUDAUROPUS* Remy

Rabaudauropus milloti Remy, 1953

Mém. Inst. scient. Madagascar, (A), 8 : 39-41, fig. 10.

Distribution : with the present record the range of this rare tropical species is considerably widened. It was earlier known from 10 localities only, all in islands in the Western and Northern

Indian Ocean : Nosy Bé, Madagascar, Seychelles, Mauritius and Sri Lanka.

Material examined : 2 ♀, 1 sex? adult 9, Col d'Amieu, leaf litter in rainforest, 13.III.1986 (J. BOUDINOT) (MNHN).

Genus *STYLOPAUROPOIDES* Remy

Stylopauropoides furcillatus Remy, 1952b

Rec. Cant. Mus., 6 (2) : 174-175, fig. 6.

Remarks : the New Caledonian specimens have proportionally longer pygidial setae a_3 than the New Zealand type specimen ($a_2/a_3 = 0.6$, not 0.9), and a short pubescence on the styli which the type specimen has not.

Distribution : the holotype from Little Barrier

in New Zealand is the only previously known specimen.

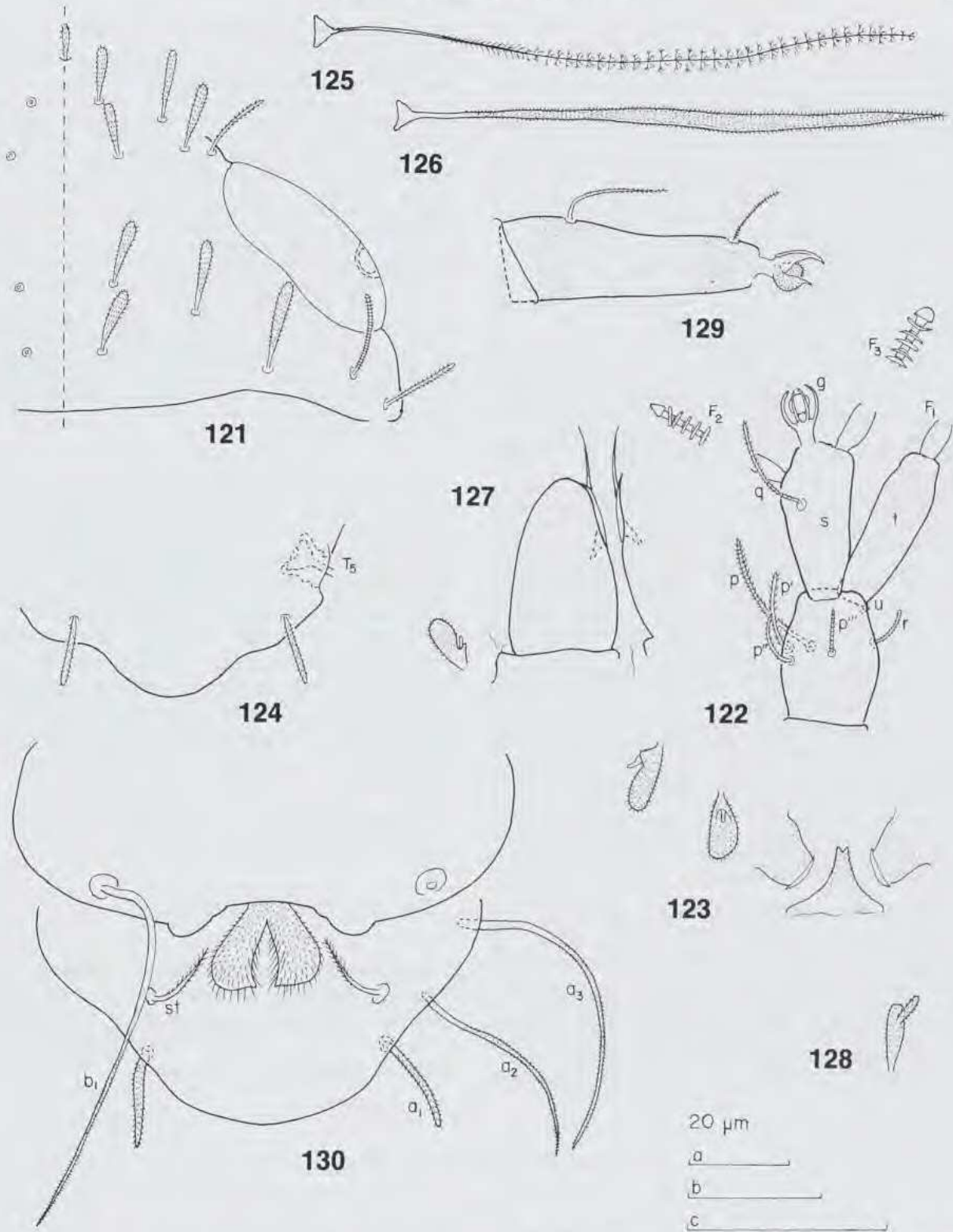
Material examined : 1 juv. 3, Rivière Blanche, scrubs in mining area, 27.III.1986 (J. BOUDINOT); 1 adult 9 (sex?), st 294b, Mt. Panié, E slope, rainforest, 1350 m, 164°45'38" E, 20°34'53" S, 24.VI.1987 (A. TILLIER & C. IHILY) (MNHN).

Stylopauropoides bilobatus n. sp.

(figs 121-130)

Description : length 0.98 (-1.08) mm. Head. Tergal setae of medium length, shortly pubescent, clavate except the most

lateral ones which are cylindrical. Relative lengths of setae (holotype only) : 1st row : $a_1 = 10$, $a_2 = 13$; 2nd row : $a_1 =$



Figs 121-130. — *Stylopaupoides bilobatus* n. sp., holotype, ad. ♂. 121 : head, median and right side, tergal view ; 122 : left antenna, sternal view ; 123 : collum segment, right and median part, sternal view ; 124 : tergite VI, median and right part ; 125 : F₂ ; 126 : T₃ ; 127 : penis, left side, anterior view ; 128 : seta of trochanter of the 9th pair of legs ; 129 : tarsus of the 9th pair of legs ; 130 : pygidium, sternal view. Scale : a : 124, 125, 126, 127, 129 ; b : 121, 122, 123, 128 ; c : 130.

10, $a_2 = 13$, $a_3 = 15$; 3rd row : $a_1 = 9$, $a_2 = 13$; 4th row : $a_1 = 13$, $a_2 = 18$, $a_3 = 16$, $a_4 = 15$. The ratio a_1/a_2-a_3 is : 1st row 0.8, 2nd row 0.5, 3rd row 0.6, 4th row 0.9. Lateral setae not studied. Temporal organs 0.7 of their shortest distance apart; in the posterolateral part a large pistil below the cuticle, its length almost 0.2 of the length of temporal organs. Head cuticle sparsely granular.

Antennae. Segment 4 with 6 cylindrical blunt setae, all but u striate pubescent; relative lengths : $p = 100$, $p' = 79$ (-85), $p'' = (53-)$ 55, $p''' = (28-)$ 37, $r = 37$ (-40), $u = 8$. Tergal seta p 0.8 of the length of tergal branch t . The latter 3 times as long as wide and as long as sternal branch s which is 1.9 (-2.1) times as long as its largest width. Anterodistal corner of s distinctly more truncate than posterodistal one. Seta q like anterior and sternal setae of segment 4, (0.6-) 0.7 of the length of s . Relative lengths of flagella (base segments included) and base segments : $F1 = 100$, $bs_1 = (7-)$ 8; $F2 = (49-)$ 53, $bs_2 = 7$; $F3 = (91-)$ 95, $bs_3 = 9$. $F1$ (3.1-) 3.2 times as long as t , $F2$ and $F3$ (1.5-) 1.7 and (2.8-) 3.1 times as long as s respectively; distal calyces of $F1$ and $F3$ hemispherical, those of $F2$ conical; distal part of flagella axes below the calyces not widened; bs_2 the smallest, bs_3 the largest. Globulus g with cylindrical stalk; the former twice as long as wide and its width 0.6 of the largest diameter of t . Antenna glabrous.

Trunk. Setae of collum segment somewhat longer than collum appendages, furcate, main branch leaf-shaped about 2.2 times as long as broad with sparse oblique pubescence; secondary branch very short glabrous; lateral and submedian setae similar. Sternite process triangular, pubescent, anterior projection with V-shaped incision; lateral appendages undivided, minutely granular, apices flattened. Setae on tergites feebly clavate (-cylindrical). There are 4 + 4 setae on tergite I, 6 + 6 on II-V (one seta doubled on tergite V in holotype), 4 + 2 on VI. Submedian posterior setae on tergite VI straight, subcylindrical, distally tapering, with oblique pubescence, diverging; they reach 0.3 of their distance apart and are 1.4 times as long as pygidial setae a_1 . Cuticle of tergites glabrous. Relative lengths of trichobothria : $T1 = 100$, $T2 = (88-)$ 96, $T3 = (84-)$ 88, $T4 = 114$, $T5 = 121$ (-134). All but $T3$ with thin axes; $T1$ and $T2$ with simple, short, straight, oblique pubescence hairs on part of basal 1/3; more outward pubescence consists in longer, ramose, whorled hairs; $T3$ has a rather thick axis, in distal 1/4 tapering, dense pubescence of short, simple, almost erect hairs; $T4$ and $T5$ with very short pubescence of simple oblique-erect hairs. Penis 1.4 times as long as wide, very blunt at apex; seta 0.4 of the length of penis.

Legs. Setae on coxa and trochanter of leg 9 clavate with cylindrical secondary branch inserted on distal third; both branches with short oblique pubescence; length of secondary branch 0.5 of the length of primary one. More anteriorly these setae are sublanceolate with blunt ends and rudimentary, cylindrical, glabrous secondary branches. However, coxal setae of leg 2 in male short and leaf-shaped. Tarsus of leg 9 tapering, 3.1 (-3.3) times as long as its largest width; cuticle minutely granular; proximal seta tapering, pointed, with short oblique pubescence; distal one cylindrical densely

striate; proximal seta 0.4 of the length of tarsus and 1.6 (-1.7) times as long as distal seta.

Pygidium. Tergum. Posterior margin between st with a broad large rounded bulge. Relative lengths of setae : $a_1 = 100$, $a_2 = 220$ (-225), $a_3 = (292-)$ > 300, $st = (75-)$ 90. The a_1 subcylindrical-tapering, thick; a_2 , a_3 and st tapering pointed; these setae curved inwards, especially a_2 and a_3 ; a_1 , a_2 and a_3 diverging, st converging; pubescence consists of straight oblique hairs, longest on st . Distance a_1-a_1 (2.3-) 2.4 times as long as a_1 , distance a_1-a_2/a_2-a_3 ; distance $st-st$ 2.6 (-2.8) times longer than st and (a little shorter than-) as long as distance a_1-a_1 . Cuticle glabrous.

Sternum. Posterior margin with a broadly U-shaped indentation which is limited on each side by a small rounded posterior bulge. Only setae b_1 ; relative lengths : ($a_1 = 100$) = (292-) 350; these setae about as long as their distance apart and similar in shape to pygidial a_3 . Anal plate 1.3 times as broad as long, bilobate, narrowest anteriorly, broader in the middle of its distal half; lobes broad and separated by a deep V-shaped incision, with evenly rounded posterolateral corners and submedian ones pointed at the end; pubescence of simple almost straight hairs, short at base, longer on posterior and inner sides.

Discussion : *S. bilobatus* seems to be a close relative of *S. furcillatus* Remy (see above) from New Zealand. It is distinguished from that species by e.g. : the broader and posterolaterally rounded lobes of the anal plate (distinct corners in *furcillatus*); the shape of the pygidial setae a_1 and st (the former thick, more or less cylindrical, pubescent and not thin, tapering, pointed, glabrous; the latter tapering, pointed, pubescent and not cylindrical, blunt, glabrous); and by the shape of the antennal globulus (stalk cylindrical, not conical).

Derivatio nominis : from Latin *bi* = two and *lobus* = lobe (anal plate).

Type locality : Col d'Amieu.

Type material : holotype ♀ adult 9, Col d'Amieu, leaf litter in mixed forest with *Mela-leuca quinquenervia*, 14.III.1986 (J. BOUDINOT) (MNHN). Paratype ♂ adult 9, same data as the holotype (MNHN).

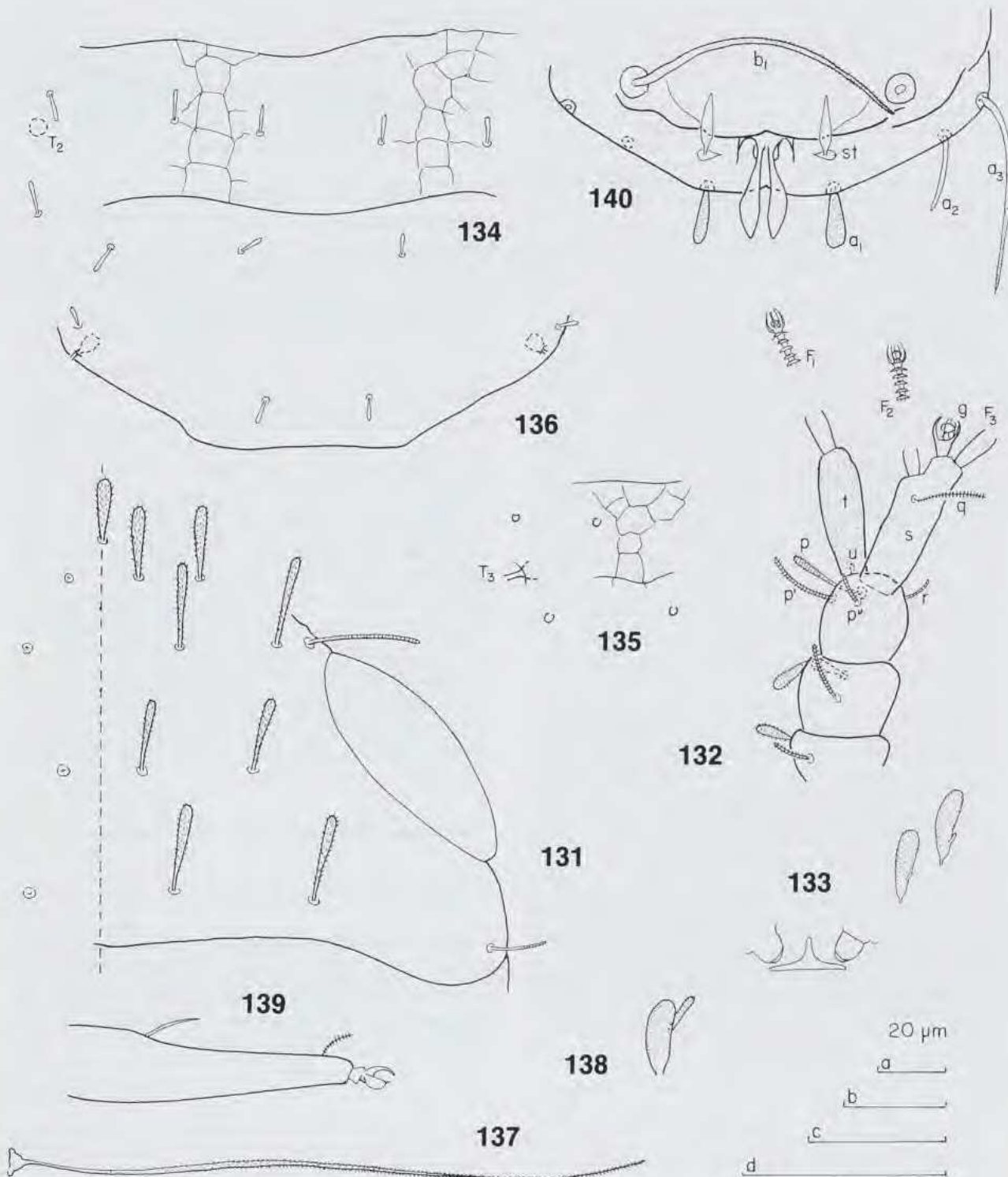
Genus *HEMIPAUROPUS* Silvestri

Hemipauropus melanesicus n. sp.

(figs 131-140)

Description : length 0.40 mm. Head. Tergal setae of medium length, main part of them clavate, with distinct

oblique pubescence; two setae anterior and posterior of temporal organ cylindrical, blunt, striate. Relative lengths of



Figs 131-140. — *Hemipauropus melanesicus* n. sp., holotype juv. 6. 131 : head, median and right side, tergal view ; 132 : left antenna, sternal view ; 133 : collum segment, left and median part, sternal view ; 134 : tergite III ; 135 : tergite IV, left part ; 136 : tergite V ; 137 : T_3 ; 138 : seta of trochanter of the 6th pair of legs ; 139 : tarsus of the 6th pair of legs ; 140 : pygidium, sternal view. Scale a : 134, 135, 136 ; b : 132, 133, 137, 138, 139 ; c : 131 ; d : 140.

setae : 1st row : $a_1 = a_2 = 10$; 2nd row : $a_1 = 12, a_2 = 13, a_3 = 17$; 3rd row : $a_1 = a_2 = 11$; 4th row : $a_1 = a_2 = 13, a_3 = ?, a_4 = 9$. The ratio a_1/a_2-a_1 is : 1st and 3rd rows 1.0, 2nd row 0.5, 4th row 0.6. Lateral setae not studied. Temporal organs 0.5 of their shortest distance apart; no pistil. Head cuticle glabrous.

Antennae. Segment 4 with 5 annulate blunt setae : p a little clavate, the others cylindrical; relative lengths : $p = p' = 100, p'' = 40-46, r = 40, u = 7, \text{no } p'''$. Tergal seta p 0.6 of the length of tergal branch t . The latter fusiform, 2.8 times as long as wide and 0.8 of the length of sternal branch s which is 2.8 times as long as its largest width. Anterodistal corner of s deeply truncate. Seta q like anterior and sternal setae on segment 4; q is 0.5 of the length of s . Relative lengths of flagella (base segments included) and base segments : $F1 = 100, bs_1 = 13; F2 = 60, bs_2 = 10; F3 = 75, bs_3 = 14$. $F1$ 2.5 times as long as t , $F2$ and $F3$ 1.2 and 1.6 times as long as s respectively; distal organs of $F1$ and $F2$ anatomically analogous to globulus g with bracts surrounding a capsule (distal part of $F3$ not studied). The g 1.4 times as long as wide, about 5 bracts, capsule flattened; width of g 0.6 of the largest diameter of t . The latter delicately granular, for the rest antennae are glabrous.

Trunk. Setae of collum segment furcate, main branch leaf-shaped with coarse surface, secondary branch very small, cylindrical, glabrous. Lateral setae about as long as submedian ones; sternite process narrow, blunt, glabrous; appendages not segmented with very thin apical cap. Setae on tergites like on head. There are 4 + 4 setae on tergite I, 6 + 6 on II-III, 4 + 4 on IV, 2 + 2 on V. Cuticle of I and II glabrous smooth, on III and IV with 2 longitudinal submedian rows of a mesh-pattern. Submedian posterior setae on tergite V straight, clavate, glabrous; they reach 1/4 of their distance apart and are 1.3 times as long as pygidial setae a_1 . Relative lengths of trichobothria : $T1 = 100, T2 = ?, T3 = 112, T5 = 124$. Axes simple, those of $T3$ thin and those of $T1, T2$ and $T5$ very thin; pubescence of very short simple hairs, oblique on $T3$ for the rest erect. Cuticle of tergites glabrous.

Legs. Setae on coxa and trochanter of leg 6 leaf-shaped, 3.3 times as long as broad; secondary branch much thinner and clavate, 0.5 of the length of main branch; cuticle granular on both branches. More anteriorly these setae are simple or with very rudimentary secondary branches. Tarsus of leg 6 slender, 3.9 times as long as its largest width, glabrous; proximal seta tapering, pointed, glabrous; distal one cylindrical, blunt, striate; proximal seta 0.2 of the length of tarsus and 1.6 times as long as distal seta.

Pygidium. Tergum. Posterior margin between a_1 with a shallow broadly V-shaped incision. Relative lengths of setae : $a_1 = st = 100, a_2 = 133, a_3 = 307$. The a_1 straight, clavate, granular; a_2 cylindrical, blunt, glabrous, curved inwards; a_3 tapering, pointed and with apical hair, proximally glabrous, distally shortly pubescent; st straight, lanceolate, glabrous. Distance a_1-a_1 twice as long as a_1 , distance a_1-a_2 2.2 times as long as distance a_2-a_3 ; distance $st-st$ twice as long as st and as long as distance a_1-a_1 . Cuticle glabrous.

Sternum. Posterior margin between st like on pygidial tergum. Relative length of setae ($a_1 = 100$) : $b_1 = 483$. They are tapering, blunt, shortly pubescent, distally striate, 1.1 times as long as their distance apart. No b_2 nor b_3 . Anal plate with a broad base with two thin, straight, posterolateral spines and a posteromedian forked appendage. The branches of the latter lanceolate with almost straight inner sides; they are 4.5 times as long as their largest width and about 3.8 times as long as the lateral spines. Plate glabrous.

Discussion : the description is based on a single specimen because all the others were moults. The species seems to be most close to *H. tenuisetosus* REMY (1956c : 202-204, figs 8-14) from Nosy Bé. Distinctive characters are the shape of the stalk of the antennal globulus (almost 0.5 of the length of the organ, in *tenuisetosus* very short); the shape and lengths of the basal segments of the antennal flagella (bs_2 shorter than the length of the antennal globulus, not longer than the latter, bs_1 and bs_3 straight and only very little longer than the antennal globulus, not curved and distinctly longer than the latter); the shape of the pygidial setae a_1 (clavate, not lanceolate); the shape of the anal plate (submedian branches separated right to the base of the plate, not only halfway); and the shape of the posterior margin of the pygidial tergum (with median incision, not evenly rounded). There are also reasons to connect *H. melanesicus* to the Madagascan *H. profugus* Remy, to *H. gressitti* Remy from Guam and to *H. difficilis* Remy from Jamaica and the Virgin Islands although it is not so close to them.

Derivatio nominis : a latinization of Melanesia.

Type locality : Col d'Amieu.

Type material : holotype juv. 6, Col d'Amieu, leaf litter in mixed forest with *Melaleuca quinquenervia*, 14.III.1986 (J. BOUDINOT) (MNHN). Paratypes : 2 juv. 6, 1 juv. 5, Goro, mixed forest, 28.II.1986 (J. BOUDINOT) (MNHN).

Family EURYPAUROPODIDAE

Subfamily EURYPAUROPODINAE

Genus *SAMARANGOPUS* Verhoeff*Samarangopus umbraculus* n. sp.

(figs 141-157)

Description : length 0.78 mm. Head. Chaetotaxy not studied because the main part of the anterior side is concealed by the collum segment.

Antennae. Segments 1-4, *s* and *t* with minutely granular cuticle. All setae cylindrical annulate. Chaetotaxy of segments 1-4 : 2/2/2 + *g*'/3. Segment 4 : $p = p'' = 21$, $p' = 19 \mu\text{m}$. Neither *r* nor *u*. Sternal branch, anterior margin 30, posterior margin 17, \emptyset of base = 8, maximum $\emptyset = 11$, $q = 15 \mu\text{m}$. Anterior margin/length of *g* = 3.3 ; anterior margin/length of *q* = 2.0 ; anterior margin/posterior margin = 1.8 ; anterior margin/maximum $\emptyset = 2.7$, maximum \emptyset/\emptyset of base = 1.4. Tergal branch subcylindrical, length = 35, of base = 6, maximum $\emptyset = \emptyset 10 \mu\text{m}$; pore not identified ; length of *t*/maximum $\emptyset = 3.5$. Globulus *g*, length = 9, $\emptyset = 6$, \emptyset base = $1 \mu\text{m}$; number of bracts = 10, their length $6 \mu\text{m}$; capsule length = 3, = $4 \mu\text{m}$. Relative lengths of flagella (base segments included) : $F1 = 100$, $F2 = 40$, $F3 = 73$. Length of base segments : $bs_1 = 16$, $bs_2 = 7.5$, $bs_3 = 13 \mu\text{m}$. $F1$ 3.3 times as long as *t*, $F2$ and $F3$ 1.5 and 2.8 times as long as *s* respectively. Calyces glabrous, those of $F1$ conical large, those of $F2$ and $F3$ hemispherical small.

Trunk. Collum segment not suitable for study. Tergites with two main types of protuberances : 1—rod-shaped with transparent wings which protrude from hemispherical bulges below the cuticle at lateral and posterior margins and anterior margins of tergite I ; 2—star-shaped (in tergal view), umbrella-like (in lateral view), structures scattered over the surface and along posterior margins ; in tergal view they also look like cart wheels with 7-11 spokes ; the latter thickest at centre, tapering distally ; top of the central axes funnel-shaped, circular centre may be an opening downwards or is forming a bladder. Between the star-shaped protuberances is a complicated pattern of cuticular structures : a— anterior granules in rows or groups ; b— on inner parts irregular more or less rounded spots without any surface structure, isolated or connected in groups of 2, 3 or 4, in the latter case subtriangular ; c— on tergites II-IV (and indistinct on VI) 2-4 bare patches with completely smooth surface and most irregular edges in two areas on each tergite. Number of marginal rod-shaped (R) and star-shaped (S) protuberances : I, ≈ 44 R (anterior and lateral margins) + 24 S (posterior margin) ; II, 14 R + $T1$ (each lateral margin) + ≈ 33 S (posterior margin) ; III, 5 R + $T2$ + 9 R + ≈ 29 S ; IV, 8 R + $T3$ + 7 R + ≈ 26 S ; VI, 9 R + $T5$ + 5 R, no S at posterior margin. Length / width ratio of tergites : I = 0.5, II = 0.3, III = IV = 0.4, VI = 0.6. All trichobothria but $T3$ with very thin axes which are glabrous except in their most distal part (distal 1/3 in $T1$, $T2$ and $T4$, distal 1/6 in $T5$) which has a minute short pubescence. $T3$ with thicker axes increasing in width outwards and ending with an ovoid swelling the length of which is 1/6 of $T3$; swelling with very short thin pubescence hairs. Lengths of trichobothria : $T1 = 90$, $T2 = ?$, $T3 = 56$ and 58, $T5 = 102 \mu\text{m}$. Ratio $T3/T2 = ?$.

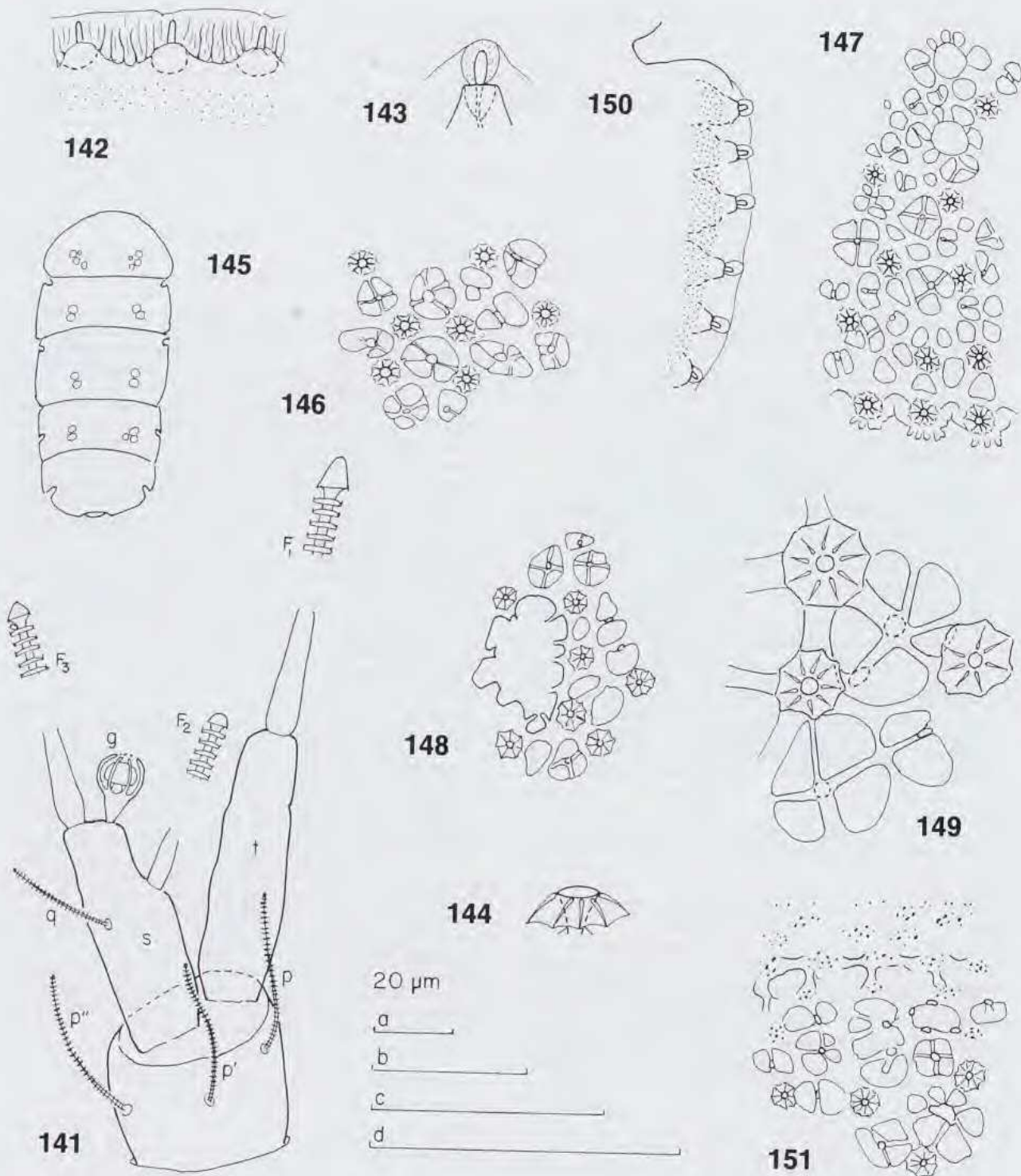
Legs. All legs 5-segmented. Setae on coxa and trochanter

of leg 8 furcate, both branches cylindrical, blunt, striate, subsimilar on trochanter but on coxa one of the branches is twice as long as the other. More anteriorly these setae are longer (on leg 1 1.5 times as long as on leg 8) with a rudimentary, pointed, glabrous secondary branch. Tarsi strongly tapering, those of leg 8 1.8 times as long as its largest diameter ; two tergal setae, both pointed glabrous ; length of proximal one 18, distal one $12 \mu\text{m}$. Proximal seta 0.4 of the length of tarsus and 1.5 times as long as distal seta. Cuticle of tarsus glabrous on tergal side, for the rest faintly granular. No proximal seta has been found on the tarsi of leg 1. All legs with large main claw and small anterior secondary claw. In leg 8 the former reaches 0.5 of the length of tarsus.

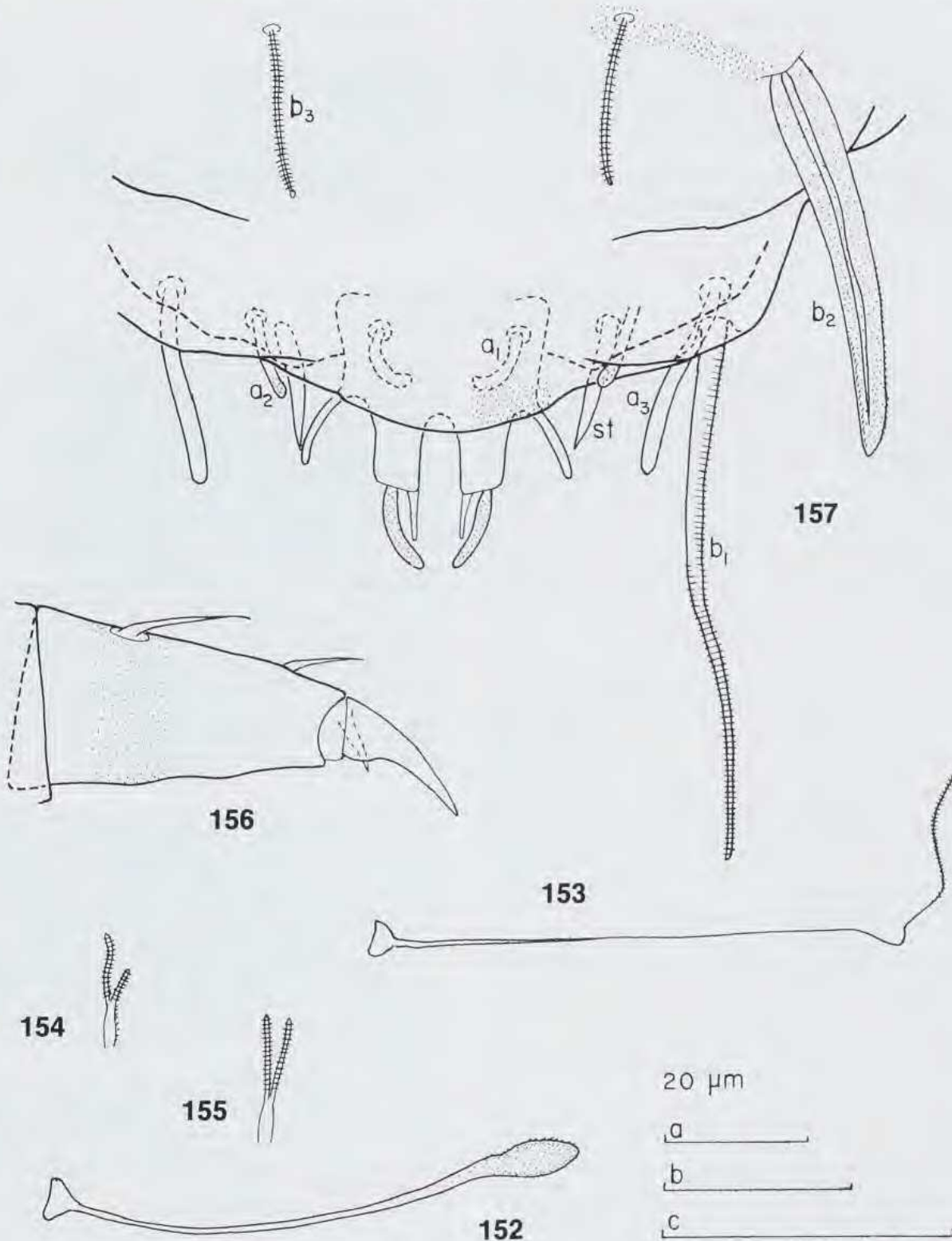
Pygidium. Tergum. Posterior margin between *st* with broadly rounded bulge. Setae subcylindrical, glabrous, converging ; a_1 , a_2 and a_3 blunt, *st* tapering pointed ; a_1 curved inwards, a_2 , a_3 and *st* almost straight. Lengths of setae : $a_1 \approx 5$, $a_2 = 7$, $a_3 = 14$, $st \approx 10 \mu\text{m}$. Distance $a_1 - a_1 = 10$, $a_2 - a_2 = 27$, $a_3 - a_3 = 38$, $a_1 - a_2 = a_2 - a_3 = 6$, $st - st = 22 \mu\text{m}$. Ratio $st - st/a_1 - a_1 = 2.2$, $a_1/a_1 - a_1 \approx 0.5$, $a_1/a_1 - a_2 \approx 0.8$, $a_1 - a_1/a_2 - a_3 = 1.7$.

Sternum. b_1 tapering striate ; b_2 large with transparent wings, on proximal half minutely granular, on distal half short oblique pubescence ; b_3 cylindrical, blunt, annulate ; b_1 and b_2 almost straight, b_3 somewhat curved inwards and diverging. $b_1 = 38$, $b_2 = 28$, $b_3 = 12$, $b_1 - b_1 = 38$, $b_2 - b_2 = 47$, $b_3 - b_3 = 25$, $b_1 - b_2 \approx 17$, $b_2 - b_3 = 11 \mu\text{m}$. Ratio $b_1 - b_1/b_1 = 1.0$, $b_1/b_2 = 1.4$. Anal plate a little broader than long, base almost twice as broad as distal part, lateral margins with a pair of thin, diverging, cylindrical, blunt, glabrous, curved branches which are 0.4 of the length of plate ; posterior 2/5 of plate divided by a U-shaped median incision into two broad branches with subparallel sides and obliquely truncated posterior margins ; each branch with two appendages, one submedian, straight, tapering, which is about as long as the width of the branch, and one subcylindrical, longer, which is curved inwards and converging, inserted in the middle of the posterior margin ; the former appendages are glabrous, the latter faintly granular.

Discussion : among the species of the genus, *S. umbraculus* may be the closest to *S. browni* Remy, described (1956f : 519-523, figs 1-3) from Chapeau de Gendarme, Yahoué, Nouméa. REMY'S description is far from complete but the new species is distinct from it at least in the following respects : 1— antennal globulus *g* proportionally smaller ; 2— the stalk of the *g* is conical, narrow at base (not subcylindrical with broad base) ; 3— the shape of both the antennal branches differs ;



Figs 141-151. — *Samarangopus umbraculus* n. sp., holotype ♀ subad. 8. 141 : right antenna, sternal view; 142 : tergite I, anterior margin with rod-shaped protuberances; 143 : rod-shaped protuberance; 144 : star-shaped protuberance; 145 : tergites with bare patches ax63; 146 : tergite I, central part; 147 : tergite II, central part and posterior margin; 148 : tergite II, submedian part with bare patch; 149 : tergite III, central part, 3 star-shaped protuberances with surrounding cuticular structures; 150 : tergite VI, right side, posterior part, sternal view; 151 : tergite VI, most anterior part. Scale : a : 142, 146, 147, 148, 150, 151; b : 141, 149; c : 144; d : 143.



Figs 152-157. — *Samarangopus umbraculus* n. sp., holotype subad. 8 ♀. 152 : T3 ; 153 : T5 ; 154 : seta of coxa of the 8th pair of legs ; 155 : seta of trochanter of the 8th pair of legs ; 156 : tarsus of the 8th pair of legs, posterior view ; 157 : pygidium, median and left part, sternal view. Pubescence only partly drawn in 156 and 157. Scale : a : 153, 154, 155, 156 ; b : 152 ; c : 157.

4— the pygidial setae b_2 are winged (not in *browni*); 5— the anal plate is broadest in its base and each of the submedian branches has two posterior appendages (broadest in the median region and one single appendage in *S. browni*).

Derivatio nominis : from Latin *umbraculum* = umbrella (shape of protuberances on the tergites).

Samarangopus spathaceus n. sp.

(figs 158-176)

Description : length (0.61-) 0.62 (-0.64) mm. Head. Seta *mp* and the setae of the *lp*-row cylindrical, annulate, blunt; *ma*, *la*- and *pe*-rows tapering pointed with short oblique pubescence. Vertex: only one seta, $l = 6 \mu\text{m}$. Tempus not studied, probably no setae. Frons without frontal pores; close to anterior part of temporal organ, fungiform frontal protuberance, $l = 3$ (-4) μm . Index of frontal setae : median row, 2 setae, $mp = (10-)$ 12, $ma = (8-)$ 10, $mp-ma = (7-)$ 12; lateral row, 4 setae, $lp_1 = (11-)$ 12, $lp_2 = (13-)$ 15, $lp_3 = (16-)$ 17, $lp_4 = (11-)$ 15, $lp_1-lp_2 = 8$ (-9), $lp_2-lp_3 = 10$, $lp_3-lp_4 = 6$ (-7), $lp_1-lp_1 = (12-)$ 13; anterior row, 2 setae, $la_1 = 12$, $la_2 = (12-)$ 13, $la_1-la_2 = 6$ (-7), $la_1-la_1 = (11-)$ 13 μm . Distance $la_1-la_1/la_1-la_2 = (1.6-)$ 2.2. Peristomal setae, 5 in number, $pe_1 = (4-)$ 5, $pe_2 = (5-)$ 6, $pe_3 = 6$ (-7), $pe_4 = 9$ (-10), $pe_5 = 10$, $pe_1-pe_2 = pe_2-pe_3 = 2$, $pe_3-pe_4 = 3$, $pe_4-pe_5 = 5$ (-7) μm .

Antennae. Segments 1-4 and whole the distal part of antenna glabrous, chaetotaxy of segments 1-4 : 2/2/2 + $g'/3$ + rudimentary p''' . Setae striate cylindrical, segment 1, $p = 7$, $p' = 6$; segment 2, $p = (9-)$ 10, $p' = 7$ (-8); segment 3, $p = 6$ (-7), $p' = (8-)$ 10, g' very small, spherical; segment 4, $p = (10-)$ 12 (-15), $p' = (11-)$ 13 (-14), $p'' = 7$ (-9) μm ; p''' rudimentary, neither u nor r . Sternal branch, anterior margin = 15 (-17), posterior margin = 14 (-16), \emptyset of base = 5, maximum = 9 (-10), $g = (11-)$ 12 (-13) μm . Anterior margin/length of $g = (1.7-)$ 1.8; anterior margin/length of $q = (1.4-)$ 1.7 (-1.8); anterior margin/posterior margin = 1.1; anterior margin/maximum $\emptyset = (1.6-)$ 1.7, maximum \emptyset/\emptyset of base = 1.8 (-2.0). Tergal branch fusiform, length 17 (-21), of base 5 (-6), maximum = \emptyset (7-) 8 μm ; pore not identified; length of t /maximum $\emptyset = 2.1$ (-2.6). Globulus g , length = 9 (-11), \emptyset 5 (-7), of base 1.5 μm ; number of bracts 7 (-8), length 5 (-6) μm ; capsule length 2.5, \emptyset 3.5 μm . Relative lengths of flagella (base segments included) : $F_1 = 100$, $F_2 = (44-)$ 46 (-50), $F_3 = 86$ (-87). Length of base segments, $bs_1 = (11-)$ 13, $bs_2 = (5-)$ 6, $bs_3 = (9-)$ 11 μm . F_1 (3.6-) 3.9 times as long as t , F_2 and F_3 (1.7-) 1.9 and (3.2-) 3.5 times as long as s respectively. Calyces glabrous, those of F_1 conical, those of F_2 and F_3 hemispherical, small.

Trunk. Setae of collum segment similar, short, furcate, main branch subcylindrical, tapering, striate and secondary branch short, tapering, glabrous; the latter about 0.5 of the length of main branch. Sternite process triangular, shortly pubescent; appendages subcylindrical, glabrous, apex subhemispherical. Tergites with 4 main types of protuberances : 1— large broadly sagittate or leaf-shaped with thick cylindrical shaft; on anterior margin of tergite I, lateral margins of I-V and posterolateral margins of VI; 2— smaller cylindrical or in the shape of an upside down truncated cone with a small umbrella-like organ protruding out of an apical cavity; the most distal part of organ just at the surface of cuticle; these protuberances evenly distributed on I, in two

Type locality : Mt. Panié, 600 m.

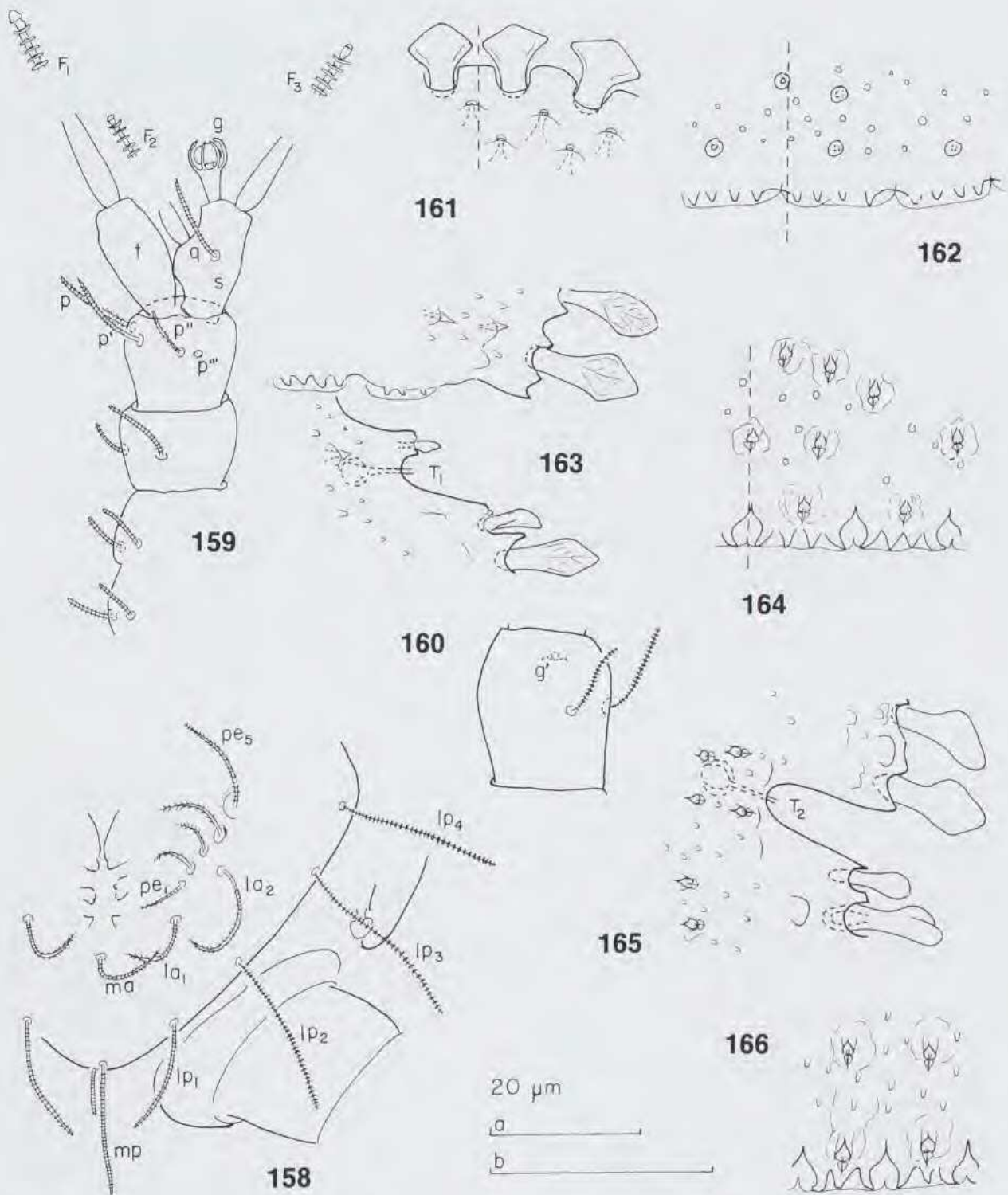
Type material : holotype ♀ subadult 8, st 292a, Mt. Panié, E slope, rainforest, 600 m, 164°46'28" E, 20°33'31" S, 3.XI.1988 (A. & S. TILLIER) (MNHN). Paratype : 1 juv. 6, st 91b, Mt. Aoupinié, rainforest, 600-700 m, 5.V.1987 (P. MORDAN, A. & S. TILLIER) (MNHN).

more or less distinct transversal rows (one median, the other posterior) on II-V; on VI on 4 humps (3 anterior in a transversal row, one posteromedian), only 2 (-3) of them outside the humps on each side, just anterior to the pits of T5; 3— small flat triangular teeth in groups of 2-5 at posterior margins of I-V; each group covered by a very thin transparent scale; teeth fewest on posterior tergites; 4— very small conical erect teeth evenly distributed on all tergites. Number and lengths of large sagittate or leaf-shaped marginal protuberances : I, no. (27-) 28 (-29), lengths (8-) 9 (-10); II, no. 1 very small/(8-) 10, lengths 6-15; III, no. (4-) 5/7, lengths 11-16; IV, no. (5-) 7/5, lengths 10-16; V, no. 5/4, lengths 7-15; VI, no. 6/1, lengths 14-16 μm . Length/width ratio of tergites (only holotype) : I, 110/190 = 0.6; II, 90/220 = 0.4; III, 104/255 = 0.4; IV, 135/235 = 0.6; V, 110/220 = 0.5; VI, 105/160 = 0.6. Ratio of width VI/V = 0.7. All trichobothria but T3 with thin axes and distal part curled up; T1, T2 and T4 may be glabrous, T5 with short erect pubescence on distal half; T3 with thicker axes and distal 1/3 flat and broadly rounded (in a juv. 6 paratype broadly lanceolate), spatulate, granular. Lengths of trichobothria : T1 = 50 (-78), T2 = 40 (-72), T3 = 25 (-47), T4 = 48 (-60), T5 = 52 (-68) μm . Ratio T3/T2 = 25/40 = 0.6.

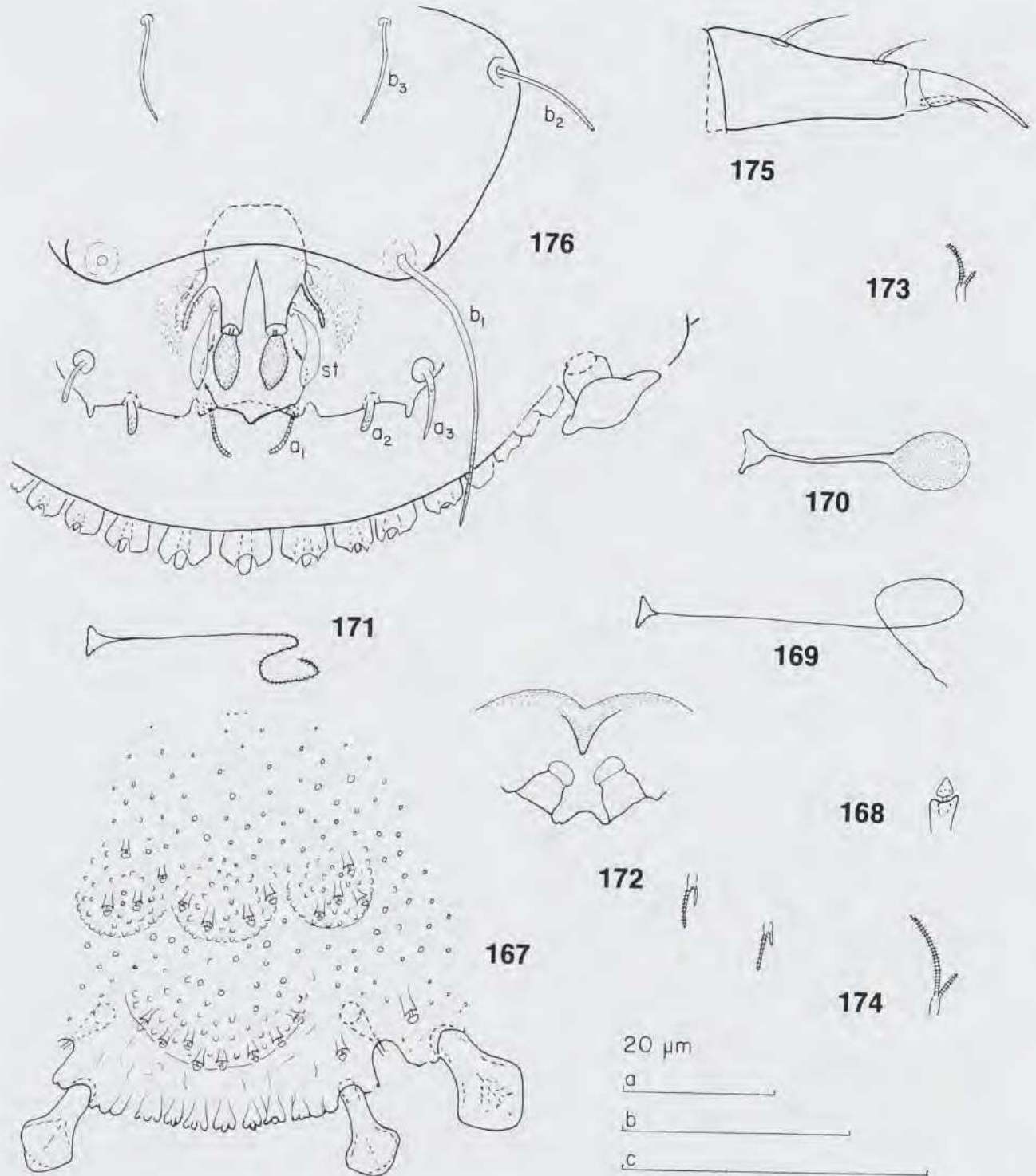
Legs. All legs 5-segmented. Setae on coxa and trochanter of leg 9 furcate, both branches subcylindrical, tapering, pointed, striate; length of secondary branch 0.3 (-0.4) of the length of seta; coxal seta 0.8 of the length of the seta on trochanter. More anteriorly these setae are similar but shorter and with secondary branches glabrous. Tarsi tapering, those of leg 9 (1.9-) 2.1 times as long as their largest diameter; two tergal setae, pointed glabrous; length of proximal one 10 (-11), distal one 7 (-8) μm . Proximal seta 0.4 (-0.5) of tarsus length and 1.4 (-1.5) times as long as distal seta. Cuticle of tarsus glabrous. No proximal seta has been found on the tarsi of leg 1. All legs with large main claw and small anterior secondary claw. In leg 1 the former reaches 0.7 of the length of tarsus, in leg 9 0.6.

Pygidium. Tergum. Posterior margin between *st* with a median triangular projection from a hexagonal subtergal plate and on each side a small posteriorly directed knob between a_2 and a_3 , a_1 and a_2 cylindrical (-somewhat clavate), blunt, a little striate; a_1 curved inwards, (straight-) converging; a_2 straight, a little converging; a_3 cylindrical, blunt, granular, curved inwards, diverging; *st* leaf-shaped, curved inwards, glabrous. Index of tergal setae : $a_1 = 5$ (-6), $a_2 = 3$ (-6), $a_3 = 7$ (-11), $a_1-a_1 = 8$ (-9), $a_2-a_2 = (20-)$ 22, $a_3-a_3 = 32$ (-35), $a_1-a_2 = (6-)$ 7, $a_2-a_3 = 5$ (-7), $st = 8$ (-10), $st-st = 6$ (-9) μm ; $st-st/a_1-a_1 = 0.8$ (-1.0), $a_1/a_1-a_1 = 0.7$ (-0.8), $a_1/a_1-a_2 = 0.7$ (-1.1), $a_1-a_1/a_2-a_3 = (0.8-)$ 1.0.

Sternum. Posterior margin with broad rounded indentation between setae b_1 , b_2 and b_3 curved inwards; b_1 tapering, pointed, glabrous except for distal half which is



Figs 158-166. — *Samarangopus spathaceus* n. sp., holotype, ad. ♀. 158 : head, left side, sternal view ; 159 : left antenna, sternal view ; 160 : 3rd antennal segment with g, right side, sternal view ; 161 : tergite I, anterior margin and median part ; 162 : tergite I, posteromedian margin ; 163 : posterolateral part of tergite I and anterolateral part of tergite II with pit of T1 ; 164 : tergite III, posteromedian part ; 165 : tergite III, lateral part with pit of T2 ; 166 : tergite IV, posterior part. Scale : a : 159 — 166 ; b : 158.



Figs 167-176. — *Samarangopus spathaceus* n. sp., holotype, ad. ♀. 167 : tergite VI, median part; 168 : protuberance with fungiform apical organ; 169 : T1; 170 : T3; 171 : T5; 172 : collum segment, median and right part; 173 : seta of coxa of the 9th pair of legs; 175 : tarsus of the 9th pair of legs; 176 : pygidium, median and left part, sternal view. Scale : a : 167, 170, 171, 173, 174, 175; b : 169, 172, 176; c : 168.

minutely pubescent; b_2 and b_3 subcylindrical glabrous, b_2 straight, b_3 diverging. Anal plate disciform with 4 cylindrical branches: two thin and blunt lateral ones which are curved inwards, diverging, obliquely pubescent; and two posteriorly directed submedian ones which are distally transversely cut and have posterior appendages, separated by a V-shaped incision the depth of which is about half of the length of the plate; each submedian appendage with a stalked, leaf-shaped, broadly lanceolate (-clavate), posteriorly directed, shortly pubescent bladder which is about 0.4 of the length of plate.

Discussion: this species is close to three Madagascan species: *S. flabrarius* Remy (1956c: 219-223, fig. 56), *S. saproxylophilus* Remy (*op. cit.*: 223-225, fig. 57) and *S. oxypygus* Remy & Rollet (1960: 221-223, fig. 17). It may be distinguished from the two former by e. g.: shape of the sternal antennal branch (more deeply truncated and with proportionately shorter stalk of the g in *S. flabrarius* and *saproxylophilus*); by the shape of the distal swelling of $T3$ (heart shaped in *S. flabrarius*, clavate in *saproxylophilus*); and by the shape of the distal part of the posterior submedian branches of the anal plate (with short and thin seta like an appendage on the sternal side and with subtriangular leaf-shaped appendages having almost straight inner sides in *S. flabrarius* and *saproxylophilus*).

Compared to *S. oxypygus* the new species has a more rounded endswelling on $T3$ (not longish), proportionately thicker antennal branches s and t (slender in *oxypygus*), much smaller posterolateral apophyses on the pygidial tergum (as large as the distal leaf-shaped appendages of the anal plate in *S. oxypygus*) and no seta-like appendages on the bases of the leaf-shaped ones (*S. oxypygus* has).

Derivatio nominis: from Latin *spatha* = spade and *-aceus* = -like (trichobothrium $T3$).

Type locality: Col d'Amieu.

Type material: holotype ♀ adult 9, Col d'Amieu, leaf litter in mixed forest with *Mela-leuca quinquenervia*, 14.III.1986 (J. BOUDINOT) (MNHN). Paratypes: 1 juv. 6, same data as the holotype; 1 ♀ subadult 8, st 326, Presqu'île Montagnès, dry forest upon calcareous ground, 30 m, 166°07'23" E, 22°02'21" S, 9.XI.1988 (A. & S. TILLIER); 1 juv. 6, Chutes de la Madeleine, in lichens, 4.III.1986 (J. BOUDINOT); 1 ♀ adult 9, st 103a, Mt. Djiaouma, rainforest with *Araucaria*, 1050 m, 165°21'35" E, 21°26'41" S, 26.III.1987 (A. & S. TILLIER) (MNHN).

Samarangopus palearum n. sp.

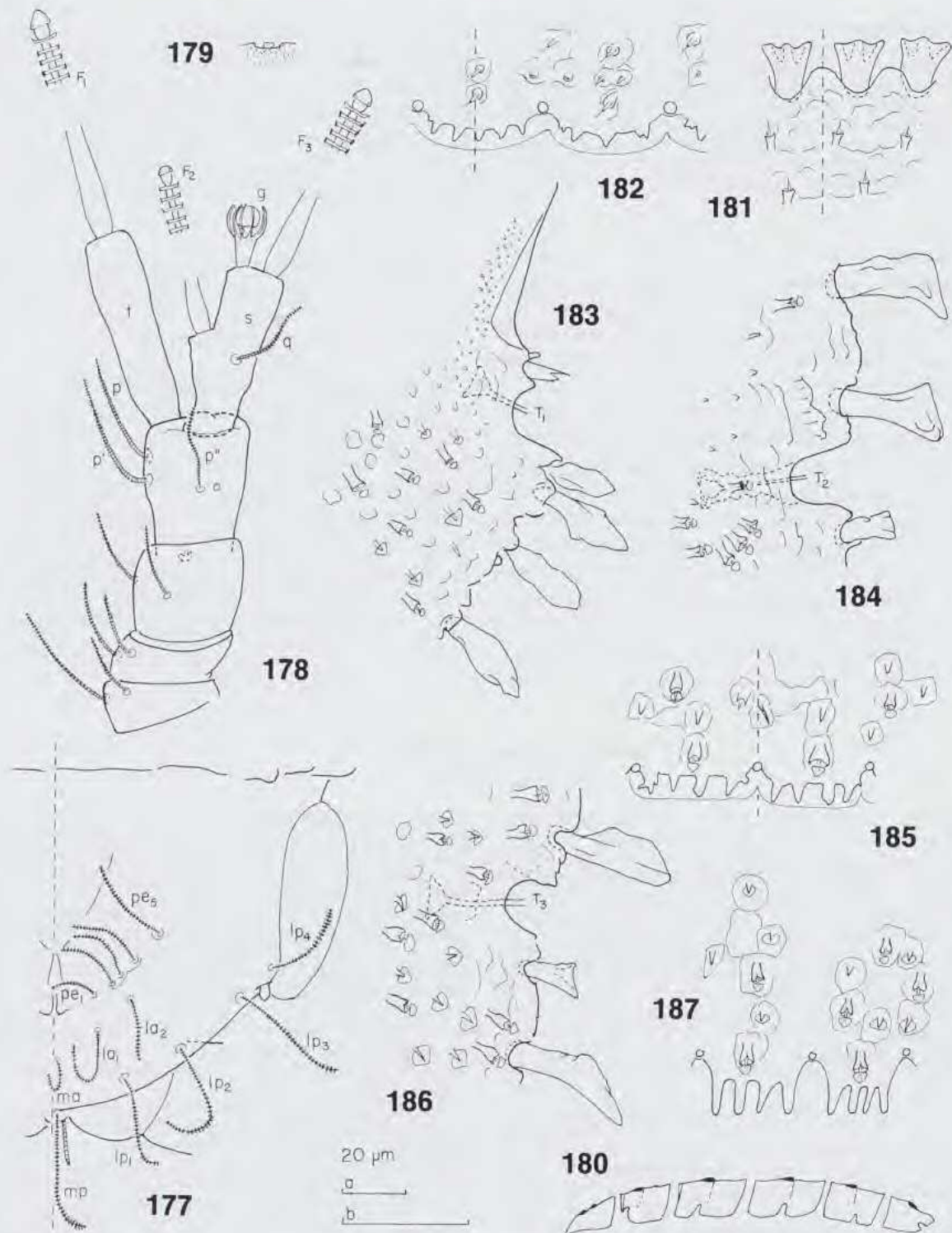
(figs 177-196)

Description: length (0.80-) 1.01 (-1.32) mm. Head. Setae cylindrical, annulate, blunt. Vertex with only one seta, length = 12 (-13) μ m. Temeus not suitable for study, probably one long seta. Frons without frontal pores; close to anterior part of temporal organ a short, cylindrical blunt frontal protuberance, length = 3 μ m. Index of frontal setae: median row = 2 setae, mp = (9-) 20 (-25), ma = (9-) 10 (-13), mp - ma = (7-) 8 (-9); lateral row, 4 setae, lp_1 = (17-) 18 (-25), lp_2 = (20-) 23 (-24), lp_3 = (19-) 21 (-26), lp_4 = (13-) 15, lp_1 - lp_2 = (10-) 11 (-12), lp_2 - lp_3 = (11-) 13 (-14), lp_3 - lp_4 = (6-) 7 (-8), lp_1 - lp_4 = (20-) 22; anterior row, 2 setae, la_1 = (15-) 16 (-18), la_2 = 10 (-15), la_1 - la_2 = 7 (-8), la_1 - la_1 = (12-) 14 (-15) μ m. Distance la_1 - la_1 / la_1 - la_2 = (1.7-) 2.0 μ m. Peristomal row, 5 setae, pe_1 = (9-) 10, pe_2 = (13-) 14 (-15), pe_3 = (14-) 16, pe_4 = 15 (-17), pe_5 = (14-) 15 (-17), pe_1 - pe_2 = (2-) 3, pe_2 - pe_3 = (1-) 2, pe_3 - pe_4 = (2-) 3, pe_4 - pe_5 = (5-) 6 (-7), pe_1 - pe_5 = (11-) 12 (-16), pe_5 - pe_5 = (28-) 33 (-36) μ m.

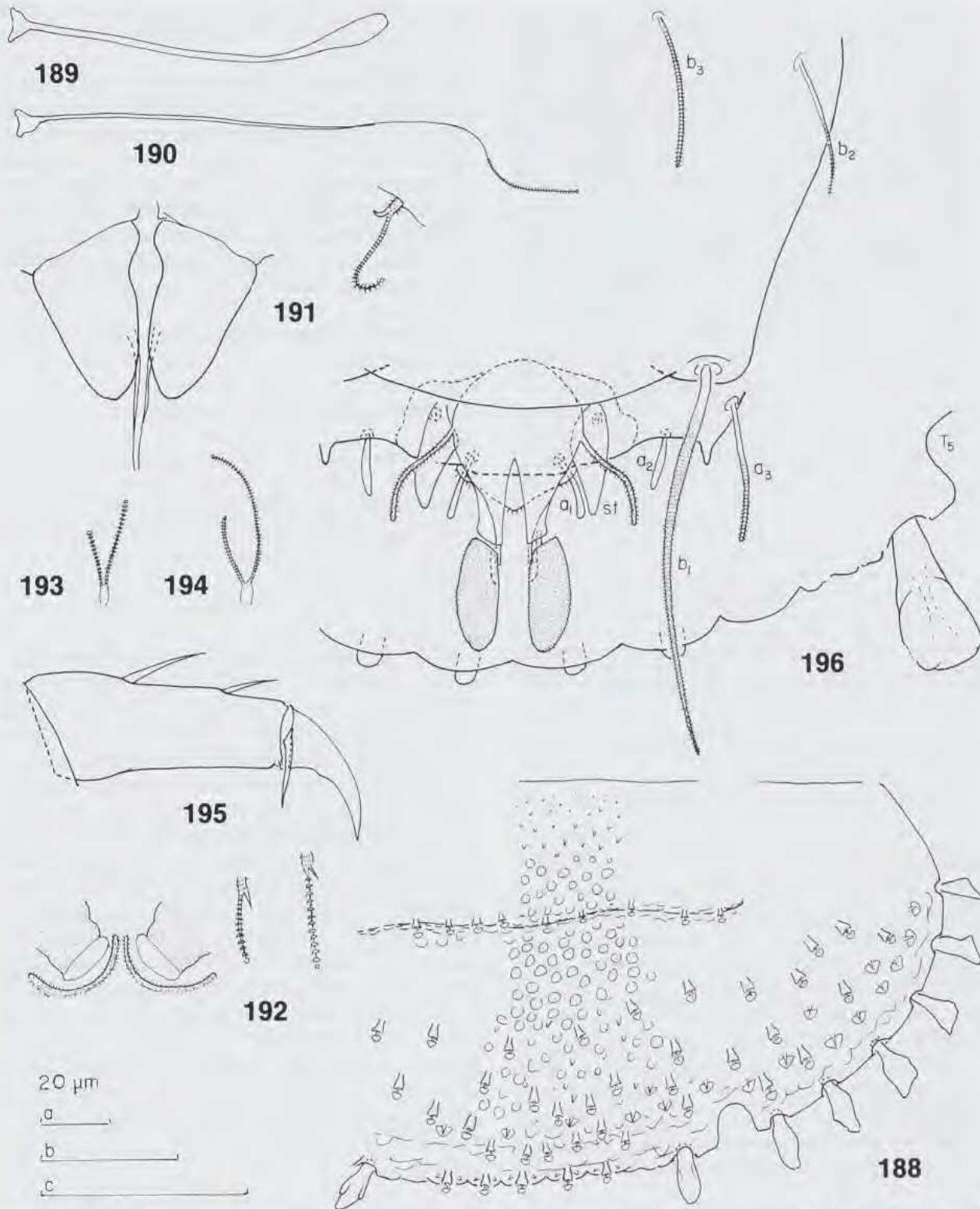
Antennae. Antennal branches glabrous, chaetotaxy of segments 1-4: 2/2/2 + g '/3 + rudimentary p ''. Setae cylindrical, a little tapering (segment 1-3 only holotype): segment 1, p = 18, p' = 11; segment 2, p = 15, p' = 12; segment 3, p = 13, p' = 11; segment 4, p = (17-) 20 (-23), p' = (14-) 21 (-26), p'' = (10-) 15 (-20) μ m, p''' rudimentary; neither u nor r . Sternal branch, anterior margin = (25-) 27 (-32), posterior margin = (22-) 25 (-27), \emptyset of base = (6) 7 (-8), maximum \emptyset = (9-) 11 (-13), q = (13-) 14 (-21) μ m. Length of s / maximum \emptyset = 2.4 (-3.2); anterior margin/length of g = 2.7 (-3.1); anterior margin/length of q = (1.6-) 1.9 (-2.0); anterior margin/posterior margin = (1.1-) 1.2;

anterior margin/maximum \emptyset = (2.2-) 2.5 (-2.8); maximum \emptyset / \emptyset of base = (1.4-) 1.6 (-1.7). Tergal branch slender, widest in distal 1/3, length = (22-) 31 (-33), \emptyset of base = (4-) 5 (-6), maximum \emptyset = (8-) 9 (-10) μ m; pore not identified; length of t /maximum \emptyset = (2.9-) 3.4 (-3.9). Globulus g , length = (8-) 10 (-12), = \emptyset 6 (-7), \emptyset of base = 1.5 μ m; number of bracts 10, lengths (5-) 6 μ m; capsule subspherical, \emptyset = (3-) 3.5 μ m. Relative lengths of flagella (base segments included): $F1$ = 100, $F2$ = (38-) 42 (-50), $F3$ = (81-) 89. Lengths of base segments: bs_1 = (14-) 19, bs_2 = (8-) 9 (-11), bs_3 = (13-) 16 μ m. $F1$ (2.9-) 3.1 (-3.5) times as long as t , $F2$ and $F3$ (1.3-) 1.5 (-1.6) and (2.7-) 3.1 times as long as s respectively. Calyces glabrous, those of $F1$ obtusely conical, those of $F2$ and $F3$ hemispherical; calyces of $F2$ smallest.

Trunk. Setae of collum segment subsimilar, furcate; main branch cylindrical, blunt, annulate; secondary branch rudimentary, spinous, glabrous; length of setae (holotype only): submedian = 13, lateral = 17 μ m. Sternite process at apex cut squarely, margins turned over and shortly pubescent; appendages subcylindrical, bipartite, minutely granular, apex flattened. All the tergites with long transversal cuticular risings, on I more or less curved, on II-VI straight; on II at a short distance back of the insertion pits of $T1$; on III and IV at the level of $T2$ and $T3$ respectively; on V and VI in front of $T4$ and $T5$ respectively. Most cuticular protuberances concentrated on these risings; only very few or no protuberances at all at subcircular posterolateral spots: 2 + 2 on I, 1 + 1 on II-V (VI). Tergites with the same main types



FIGS 177-187. — *Samarangopus palearion* n. sp., holotype ad. ♂. 177 : head, right side, sternal view ; 178 : left antenna, sternal view ; 179 : globulus g' of 3rd antennal segment ; 180 : tergites with insertion pits of trichobothria and transversal cuticular risings, lateral view $\times 57$; 181 : tergite I, anterior margin ; 182 : tergite I, posterior margin ; 183 : tergite II, anterolateral part with insertion pit of T_1 ; 184 : tergite III, lateral part with insertion pit of T_2 ; 185 : tergite III, posterior part ; 186 : tergite IV, lateral part with insertion pit of T_3 ; 187 : tergite IV, posterior part. Scale a : 177, 178, 181, 182, 183, 184, 185, 186, 187 ; b : 179.



Figs 188-196. — *Samarangopus palearum* n. sp., holotype ad. ♂. 188 : tergite VI, posteromedian and right part; 189 : T3; 190 : T5; 191 : penes and coxal seta of the 2nd pair of legs, anterior view; 192 : collum segment, median and left part; 193 : seta of coxa of the 9th pair of legs; 194 : seta of trochanter of the 9th pair of legs; 195 : tarsus of the 9th pair of legs, anterior view; 196 : pygidium, left and median part, sternal view. Scales : a : 188, 191; b : 189, 190, 192, 193, 194, 195; c : 196.

of protuberances as in the former species : 1— large wedge-shaped, or irregularly leaf-shaped, on anterior margin of I, lateral margins of I-V and lateral-posterolateral margins of VI ; 2— smaller ones with umbrella-like organ at apex ; 3— small flat triangular teeth in groups of 3-5 (-6) at posterior margins of I-V ; teeth longer on posterior tergites ; 4— small conical teeth distributed on all tergites, partly in small groups ; 5— moreover there are very small knobs between the protuberances no. 2-4 on central parts of I-VI. Number and lengths (the latter only holotype) of large wedge- or leaf-shaped protuberances : I, no. (32-) 34 (-37), length 9-15 ; II, no. 1/10, length 6-20 ; III, no. 5/(6-) 7, length 10-20 ; IV, no. 6/5, length 11-21 ; V, no. 7/4, length ? ; VI, no. 6 (-7)/1, lengths 14-17 μm . Length/width ratio of tergites (only holotype) : I, 171/278 = 0.6 ; II, 165/350 = 0.5 ; III, 175/380 = 0.5 ; IV, 181/385 = 0.5 ; V, 184/355 = 0.5 ; VI, 110/252 = 0.4. The leaf-shaped protuberance on the anterior margin of the pits of trichobothria *T1* reduced in size, jag-like, with (1-) 2 apical cusps. Ratio of width VI/V = 0.7. All trichobothria but *T3* with thin axes, especially *T1* and *T2*, glabrous except in their most distal part which has an erect minute pubescence which is most distinct on *T4* and *T5* ; *T3* glabrous with thick axis and a distal clavate swelling, the length of which is 1/4 of the length of *T3*. Length of trichobothria : *T1* = (75-) 110 (-115), *T2* = (80-) 94 (-115), *T3* = (45-) 55 (-70), *T4* = (70-) 100 (-108), *T5* = (70-) 85 (-105) μm . Ratio *T3/T2* = (0.5-) 0.6. Penes with rounded tips, length = (30-) 32 (-34), \emptyset at base = (23-) 30, length of seta = (27-) 28 (-35) μm . In stage subadult 8 penes are undeveloped, rounded with a small apical knob.

Legs. All legs 5-segmented. Setae on coxa and trochanter of leg 9 furcate, both branches cylindrical, blunt, annulate ; length of secondary branch 0.4-0.5 (-0.6) of the length of seta ; coxal seta 0.6 of the length of the one on trochanter. More anteriorly these setae are simple with secondary branches rudimentary, glabrous, pointed. Tarsi tapering, those of leg 9 (1.9-) 2.3 (-2.4) times as long as its largest diameter ; two tergal setae, both pointed glabrous ; length of proximal one (33-) 16 (-18), distal one (7-) 10 μm . Proximal seta (0.3-) 0.4 of the length of tarsus and (1.4-) 1.6 (-1.8) times as long as distal seta. All legs with large main claw and small setose anterior secondary claw ; main claw (21-) 23 μm , length (0.5-) 0.6 of tarsus length ; secondary anterior claw (10-) 11 (-13) μm . No proximal seta has been found on the tarsi of leg 1. Cuticle of legs granular.

Pygidium. Tergum. Posterior margin between *st* with a broadly triangular median projection from a subhexagonal subtergal plate and on each side a posteriorly directed subcylindrical blunt knob between a_2 and a_3 . Setae a_1 cylindrical with small distal swelling ; a_2 somewhat clavate (or like a_1) ; a_3 cylindrical blunt ; *st* bladder-shaped and tapering distally ; all setae but a_3 glabrous, the latter striate in distal half ; a_1 diverging, a_2 a little converging, a_3 and *st* almost straight. Index of tergal setae : $a_1 = (5-) 6$, $a_2 = 5 (-7)$, $a_3 = (10-) 14 (-16)$, $a_1-a_2 = 8 (-10)$, $a_2-a_3 = (25-) 29$, $a_3-st = (35-) 42$, $a_1-a_2 = (7-) 10$, $a_2-a_3 = (5-) 7$; *st* = (10-) 11 (-13), *st-st* = (10-) 16 μm ; *st-st/a_1-a_1* = 0.5 (-0.9), $a_1/a_1-a_1 = 0.6 (-0.7)$, $a_1/a_1-a_2 = (0.6-) 0.7$, $a_1-a_1/a_2-a_3 = (1.3-) 1.6 (-1.7)$.

Sternum. Posterior margin with broad rounded bulge between setae b_1 . The latter striate tapering, b_2 tapering pointed, b_3 cylindrical blunt ; b_2 and b_3 a little diverging. Anal plate like in *S. spathaceus* but submedian posterior appendages cut obliquely distally, deepest on sternal side and with bladder-shaped appendages having distinct anterolateral

corners ; plate glabrous, lateral branches with short oblique pubescence, bladder-shaped appendages very densely and very shortly pubescent.

Discussion : *S. palearum* may be a close relative of *S. spathaceus* described above but represents a distinct species characterized by e. g. : more slender antennal branches (*t* about 3.5 times longer than wide, not about 2) ; shape of the frontal protuberances (cylindrical, not fungiform) ; shape of the protuberances of the tergites ; the T_3 ; setae on the coxa and trochanter of leg 9 ; and by the *st*.

Derivatio nominis : from Greek *palear* = fold (of the tergites).

Type locality : Rivière Blanche.

Type material : holotype σ adult 9, Rivière Blanche, scrubs in mining area, 27.III.1986 (J. BOUDINOT) (MNHN). Paratypes : 1 σ adult 9, same data as the holotype ; 1 σ adult 9, 1 juv. 5, st 318, Dent de Saint-Vincent, south ridge, rainforest, 1170 m, 166°12'59" E, 21°52'03" S, 5.VIII.1987 (A. & S. TILLIER, L. BONNET DE LARBOGNE et Y. LETOCART) ; 1 σ subadult 8, st 288, Mt. Ningua, rainforest upon ultramaffic rocks, 1000 m, 166°09'03" E, 21°44'24" S, 28.X.1986 (A. & S. TILLIER) ; 2 juv. 6, st 302, Plateau de Dogny, rainforest, 920 m, 165°52'26" E, 21°37'16" S, 9.I.1987 (A. & S. TILLIER) ; 1 σ adult, st 91b, Mt. Aoupinié, rainforest, 600-700 m, 5.V.1987 (P. MORDAN, A. & S. TILLIER) ; 1 juv. 6, Col d'Amieu, leaf litter in mixed forest with *Melaleuca quinquener-via*, 14.III.1986 (J. BOUDINOT) ; 3 σ adult 9, st 16a, Bobeitio, rainforest, 350 m, 165°01'01" E, 20°57'13" S, 17.XI.1988 (A. & S. TILLIER) ; 1 σ adult 9, st 198a, Mt. Oua Tilou, southern ridge, dry forest, 510 m, 164°51'28" E, 20°51'57" S, 19.X.1988 (A. & S. TILLIER & J. CHAZEAU) ; 3 σ adult 9, 1 σ subadult 8, st 292a, Mt. Panié, E slope, rainforest, 600 m, 164°46'28" E, 20°33'31" S, 3.XI.1988 (A. & S. TILLIER) ; 1 σ adult 9, st 323, Ouayaguette, rainforest, 610 m, 164°42'53" E, 20°40'13" S (A. & S. TILLIER) (MNHN).

TAXONOMIC COMPOSITION OF THE NEW CALEDONIAN PAUROPOD FAUNA

With the single species described from near Nouméa by REMY in 1956 and those accounted

for above, 22 species of Pauropoda have been identified from New Caledonia. Although the list

is far from complete, some general remarks are justified : partly because the taxonomic composition of the studied material indicates a rich fauna ; and partly because the knowledge of the surrounding faunas is most unsatisfactory. Of the five Pauropoda families, one in the order Hexamerocerata and four in Tetramerocerata, only two belonging both to the latter order are represented (Pauropodidae and Eurypauropodidae). The absence of the Millotauropodidae (Hexamerocerata) and Brachypauropodidae (Tetramerocerata) was unexpected. However, this absence may be misleading : the representatives of both families are scarce and difficult to find in the samples, the former because they do not look very much alike the more common pauropods and the latter because they are often small and transparent. Both families will probably emerge in future samplings.

Of the two families represented, the Pauropodidae is most diverse with 18 species, 5 genera

and one subfamily (out of \approx 500 species, 15 genera and 5 subfamilies in the family). In most areas investigated this family includes 80-95 % of the species recorded, in New Caledonia 82 % (*vide e. g.* REMY 1956c, 1959 ; SCHELLER 1970, 1982, 1984, 1989, 1990). Most species, 11, are in *Allopaupopus*. Next come *Pauropus* with 3 and *Stylopaupopoides* with 2 species. Of the 18 species in the family all but 4 (2 in *Allopaupopus*, 1 in *Rabaudaupopus*, 1 in *Stylopaupopoides*) are new to science. Of the other subfamilies two, Colinauropodinae and Diplopaupopodinae, are seldom met with but representatives of Scleropaupopodinae and Polypaupopodinae should occur in New Caledonia. In the second family, Eurypauropodidae, 4 species in one genus are known from New Caledonia (out of 35 species and 5 genera in the whole family). None is known outside the island and 3 are described above.

GENERAL DISTRIBUTION AND ORIGIN OF THE NEW CALEDONIAN FAUNA

The Pauropoda of the Indo-Australian area are in general unknown, but a few lists of local faunas both from there and from neighbouring areas are useful for the understanding of the New Caledonian fauna. REMY and his collaborators have investigated Madagascar and the Mascarenes, and the present author has published faunal lists from Sri Lanka and the Seychelles. Short lists can also be compiled from descriptions of new species from the island Koh Chang in the southernmost Thailand (HANSEN, 1902), Guam and the Palau Islands (REMY, 1957b), New Zealand (especially some papers by REMY) and Australia (papers by HARRISON, TIEGS and REMY); a few more data may be found in scattered notes from a few other places.

Among 22 New Caledonian species, 18 are not known outside the island. Thus there are only 4 species with wider ranges, *viz.* *Allopaupopus (A.) maoriorum* which may be widely distributed on the southern hemisphere ; *A. (D.) mortensenii* which seems to be Ethiopian-Oriental, may be Notogean too ; *Rabaudaupopus milloti*, earlier reported from only 10 localities on islands in the western part of the Indian Ocean ; and *Stylopaupopoides furcillatus* which also occurs in New

Zealand. Similar types of connections stand out in the morphological relationships of several of the new species. At least *A. unioensis*, *A. minusculus*, *A. macropygus*, *A. silvaticus* and *Samarangopus spathaceus* have relatives in the Ethiopian region, maybe partly in the Oriental region too, whereas *Stylopaupopoides bilobatus* has Notogean relatives.

In general the New Caledonian Pauropoda seem to have connections closer with the Ethiopian region than with the Oriental, and also closer with the latter than with Notogea. In many Pauropoda faunas there are species with even wider ranges and often a subcosmopolitan element can be discerned, but this is not the case here. As far as known at present the fauna has only a few species with large ranges and is dominated by endemic species. Possibly these elements, or their ancestors, once invaded the island from Gondwanaland before it fragmented in the late Mesozoic. Some species in *Allopaupopus* and the representatives of the genera *Stylopaupopoides* and *Samarangopus* belong to this element. However, it is necessary to stress that future collecting may change this picture. Moreover, before the faunas of the surrounding

islands have been investigated the degree of endemism may hardly be precised. At present, as much as 77 % of the species have not been collected in more than one or two localities, which probably does not reflect their actual

distribution. More species are restricted to the inland rather than to the coastal lowland, but only further information can show if there are really more endemic taxa in the former than in the latter.

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